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Health Care Surveys Using Diaries

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Abstract

The study was conducted to determine the cost-effectiveness of diaries for obtaining health data from a general population sample. Comparisons were made between the results obtained from diaries, face-to-face interviews, and telephone interviews. The effects of differential diary procedures and compensation were tested.

The results indicated that levels of cooperation obtained with diary pick-up methods are as high as those obtained with repeated face-to-face or telephone interviews. Diary mail-in procedures, however, are substantially worse than other methods in obtaining household cooperation. Compensation has no significant effect on cooperation for diary pick-up methods but does have a significant effect for mail-in procedures.

For the less salient medical events, substantially higher reporting is obtained from diaries than from personal interviews. For the more salient events, the differences in the number of reported events between diary and personal methods become insignificant. Diary households report slightly more purchases of medical supplies, and the details of medical events and expenditures are consistently more accurate in the diaries, as are reports about household members other than the respondent.

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Health Care Surveys Using Diaries

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July 1980

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
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FOREWORD

In its legislative mandate to undertake and support research, demonstrations and evaluations that address the problems associated with the delivery of health services in the United States, the National Center for Health Services Research (NCHSR) conducts, and supports others to conduct research in the priority areas of health insurance, health care costs and cost containment, planning and regulation, technology and computer science applications, and health manpower. A common element in almost all such research is the necessity to use the methods of survey research or to analyze data collected by survey methods. Because no analysis can be any better than the data on which it relies, it is incumbent on NCHSR to ensure the validity and reliability of data by the improvement of survey research methods. This is especially true since changes in the nation's health policy may be influenced by the results of this research. Thus, survey research methodologies cut across all of NCHSR's research priorities.

Diary survey methods have been shown to be effective procedures for obtaining health information, achieving high cooperation rates from respondents and eliminating some problems inherent with face-to-face interviews, such as omissions and telescoping. While this results in better data, the costs of using diary methods are somewhat higher, raising the question, "Is the increase in data quality worth the increased price?" Additional research is needed on the costs and benefits of these and alternative mixtures of survey procedures.

Gerald Rosenthal, Ph.D.
Director, NCHSR

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1. INTRODUCTION

The importance of reliable national statistics on the incidence of illnesses and the use of and expenditures for health care has led to the establishment of the Health Interview Survey, which is an integral part of the program of the National Center for Health Statistics (1964, 1969, 1972a), and to continuing studies by the National Center for Health Services Research. These surveys have proved of great importance and have provided much valuable data. However, they have also run into problems that continue to defy solution. A major problem is that these surveys depend on recall for periods of up to a year, even though it is known that substantial recall errors may occur (U.S. National Center for Health Statistics, 1963, 1965a, 1965b, 1965c, 1966, 1967, 1968, 1971, 1972a, 1972b, 1973a, 1973b). These errors are basically of two types:

1. Omissions.--The respondent omits an illness episode or expenditure entirely. These omissions are not random but are usually concentrated among short illnesses for which hospitalization was not required or for routine visits to a physician.
2. Telescoping.--The episode is remembered, but there is an error in the date, so that the episode is remembered as occurring more recently than it did.

A second problem with these surveys is that they are very expensive, since substantial detail is required from those who have been most ill.

An alternative procedure that may help to solve or reduce some of the problems of health surveys is the use of diaries to obtain health care information. Diaries eliminate or greatly reduce the recall problem, as well as reduce interviewing costs. Diaries may present new problems, however, including level of cooperation, errors in record keeping, and possible conditioning effects. Yet, the diary approach has proven very valuable in other types of surveys, and the possibility that diaries may be equally useful in obtaining health information is sufficiently great to warrant their testing in some controlled experiments. (See Boyd and Westfall, 1960; Ehrenberg, 1960; Ferber, 1953, 1959; Kemsley and Nicholson, 1960; Life Study, 1958; Pearl, 1968; Quackenbush and Shaffer, 1960; Sudman, 1964; Sudman and Ferber, 1971, 1974.)

More generally, research on the use of diaries to obtain health information may illustrate the differences between remembering medical and nonmedical events and, even more generally, may lead to a better understanding of the effects of threat and salience on memory and record keeping.

This study attempted to determine the cost-effectiveness of diaries for obtaining health data from a general population sample. Comparisons were made between the results obtained from diaries, face-to-face interviews, and telephone interviews. The effects of different diary procedures and compensation were also tested. The analyses compare levels of cooperation and frequencies of health episodes reported by the various methods and by level of education and previous medical history of respondent households.

Previous Research

The earliest study of the use of diaries for collecting medical information that we are aware of was conducted by the California State Department of Public Health in San Jose during the period March-May 1952 (Allen et al., 1954). Comparisons were made between a diary and a personal interview for disabling and nondisabling illnesses, medically and not medically attended. As expected, the reported monthly rates of nondisabling, not medically attended illnesses were substantially higher in diaries than in personal interviews. Conversely, when respondents were asked about illnesses "yesterday," higher rates were reported on the initial interview, indicating telescoping. Although the reporting results are carefully discussed, there is no information given on sample cooperation and the specific diary form used.

More recently, Roghmann and Haggerty used a diary in their long-term study of health and illness in young Rochester, New York, families (Roghmann and Haggerty, 1972). Their highly structured diary used a calendar approach with one page for each day of the month that the diary was kept. Families reported on how well each member felt each day and what regular or special medical care was obtained. Cooperating households were paid $10 for the month, and the overall completion rate was 82 percent. No methodological tests were performed for the major parts of the diary, but comparisons were made on reported utilization of professional services between the diary and a recall interview that covered a comparable period. No major differences were observed.

Verbrugge (1978) has reviewed some recent research on the use of health diaries and is currently analyzing data from a health diary study in the Detroit metropolitan area. Marquis (1978, 1979) and Newhouse et al. (1976) have discussed the use of health diary data in the context of a health insurance study. Other users of diaries for collecting health data include Laurent, Cannell, and Marquis (U.S. NCHS, 1972a), Mechanic and Newton (1965), and Alpert and colleagues (Alpert, Kosa, and Haggerty, 1967; Kosa, Alpert, and Haggerty, 1967). Generally, the results of methodological studies using diaries indicate that richer and more accurate information is obtained from diaries but that costs are higher.

Various other studies have not used diaries directly but have utilized them as reminders for respondents at later interviews. These include Downes and Collins (1940), Smith and Mosley (1951), Muller, Waybur, and Weinerman (1952), Peart (1952), and Wright et al. (1976). Currently, several studies that use diaries are in progress, including the National Medical Care Expenditure Survey.

Additional research on comparisons of telephone and face-to-face health interviews has been provided by Cannell and his colleagues (U.S. National Center for Health Services Research, 1977), Colombotos (1969), Coombs and Freedman (1964), and Siemiatycki (1979), although these studies do not involve diaries. These studies found either no differences between procedures or small mixed differences. Thus, Cannell and others reported a slightly higher percentage of "don't know" responses on the telephone, while Colombotos found that doctors on the telephone are less likely to overstate the reading of medical journals. The Survey Research Laboratory's earlier research comparing face-to-face, telephone, and diary methods for collecting health data is discussed below.

Summary of 1973-74 SRL Project

The Survey Research Laboratory of the University of Illinois conducted an experimental study from October 1973 through March 1974 to investigate the use of diaries to obtain health care information. Of the many areas that needed to be studied, the following two appeared to be the most critical:

1. What should be the format for a medical diary?--In other uses of diaries to obtain information on consumer expeditures, both journal and ledger diaries have been used. In journal diaries, the entries are made in time sequence, while in ledger diaries, they are made by categories of events, such as visits to the doctor, absences from work, and purchases of medicines. For consumer expenditure studies, the work of Sudman and Ferber (1971, 1974) has shown that ledger diaries obtain more complete information and a higher level of reporting, but these results may not apply to medical events.
2. Should households be compensated for keeping records?--Again the results of Sudman and Ferber (1971, 1974), as well as those of commercial panel operators, suggest that cooperation is improved if families are compensated for their diary keeping. However, these results are for expenditure diaries, which require more work than medical diaries, and may not hold for the easier medical diaries. Obviously, compensation affects the cost-effectiveness of diary procedures.

Respondents in the 1973-74 panel study were members of either the Greater Marshfield Community Health Plan in central Wisconsin or Intergroup Prepaid Health Service, Inc. in the Chicago metropolitan area. The Intergroup respondents were all employees of the Illinois Bell Telephone Company and their families. Of the initial random sample of 1,007 selected from membership lists and split equally between the two locations, 987 were eligible for interviewing.

After the initial personal interview, respondent households were randomly assigned to one of the six procedures involving method of compensation and data-collection method. In each location, a randomly selected one-third of the respondents kept ledger diaries and one-third kept journal diaries for three months; the other third participated in a series of three additional personal recall interviews once a month for three months. The diaries were collected at the end of each month by an interviewer who discussed the entries with the diary keeper, retrained the household if necessary, and left a new diary for the following month. (Copies of the forms used in the 1973-74 study are available from the Survey Research Laboratory.)

In the Chicago metropolitan area, half the households were offered a gift of $10 for cooperating for the three months, while half were not offered any gift. In the Marshfield area, half the households were offered a report of their medical experiences summarized over the three-month period and compared with other households of similar size, while the other half were not offered this report. Nevertheless, after data collection was completed, all cooperating households in Marshfield received this report. The report was offered instead of cash in Marshfield because of concerns that in a small community it would be impossible to keep the two treatments independent. Neighbors and relatives who received a cash gift would tell others who did not receive a gift, which could have led to substantial ill-feeling.

The major findings of the 1973-74 study are summarized briefly below. The complete text of this report is given as Appendix B.

Willingness To Participate in Panels

The most important finding of the earlier study was that households are willing and able to participate in panels that report medical events. Regardless of the collection method, noncooperation after the initial interview averaged from 6 to 7 percent in the Marshfield area and from 10 to 14 percent in the Chicago metropolitan area. Almost all losses occurred in the first month. There was no evidence of unwillingness to keep diaries for three months (or probably even longer periods, if requested).

There were no significant differences in panel cooperation between households who used diaries and those who participated in monthly recall interviews. Compensation, however, did have a significant effect on increasing cooperation, particularly in the Chicago area. The differences between Chicago and Marshfield were primarily due to the generally higher cooperation in the nonmetropolitan Marshfield area.

Although the special character of this sample would probably make households more willing than average to participate in a medical panel, one might still estimate that a national panel recruited by interviewers from the U.S. Bureau of the Census could obtain cooperation from 85 to 90 percent or more.

Levels of Reporting

Households using diaries in the 1973-74 study reported 14 percent more medical events than did households on the recall interview. The major difference was in the category "felt ill but did usual activities," where the level of reporting on diaries was almost double that obtained from personal interviews. This higher level of reporting in diaries was not observed for all items. For several categories, such as phone calls to physicians, purchases of medicine, and payment of bills, the levels were higher for personal recall interviews. No significant differences were found between ledger and journal diaries in number of events reported, but the ledger diaries contained more complete details and were easier to process.

There were also some small but consistent differences in levels of reporting between compensated and noncompensated diary households, especially in the Chicago area, where the reporting levels of compensated households was higher. No effects of compensation on levels of reporting were found for the personal recall interviews.

Some indication of an initial conditioning effect was observed for all methods, with a higher level of reporting in the first month. It is not clear whether this was due to changes in accuracy of reporting over time or to changes in actual behavior. That is, the initial interview may have stimulated some households to see a doctor or dentist for a routine checkup.

Validation Comparisons

A comparison of clinic records with household reports indicated that using any procedure, no evidence existed of telescoping or of imaginary doctor or hospital visits. In the Marshfield area about one-sixth of all clinic visits were omitted from household reports, regardless of the procedure used. On the other hand, in the Chicago area only about half as many clinic visits were omitted by diary households as by households using personal recall interviews. For diary households in both Chicago and Marshfield, the omission rate was lower for those receiving compensation.

The Chicago validation results contradicted the data on levels of reporting that indicated personal interviews produced a higher level of reports of doctor visits. These mixed results, both statistically significant but based on different samples of events, indicated that no collection method was clearly superior for all kinds of medical events.

Comparison of Reporting on Initial Interview and in Panel

Comparisons of the initial interview and subsequent recall interviews in the earlier study indicated that the initial interview was significantly higher (about 20 percent) on reports of number of days stayed home, probably because of telescoping. There were virtually no differences between the initial and subsequent interviews in number of bed days reported, but the panel did report many more hospital visits. The latter were almost entirely due to outpatient visits, which seem to have been missed in the initial interview because respondents were asked about being hospital patients. Results on reports of doctor visits were mixed, with the initial interview higher than the diary reports but lower than the subsequent recall interviews.

Experimental Procedure Used in This Study

The major problem with the earlier research was that a special population was used. Although this special population made validation much more direct and complete, it was not clear whether the results could be directly generalized to the population of all households. The next stage in the research, reported here, is to test the use of ledger diaries on a general household sample in a larger geographic area. This is an intermediate step to testing the use of diaries with a national sample.

It was anticipated that households with lower educational levels and higher levels of illness would have the greatest difficulty in keeping diary records as well as recalling medical events. For this reason, a disproportionate stratified sample was selected. Specifically, the procedures described below were used in conducting this study.

1. The Survey Research Laboratory screened a probability sample of 6,432 households in Illinois during January-March 1976 using telephone interviews to obtain information on medical experiences in the previous year as well as demographic information. The results of the initial screener interview are given in Table 1.1. It can be seen that screener information was obtained from 5,214 households, or 81.1 percent of all eligible households. This level of cooperation is excellent, considering that two-thirds of the population of Illinois is concentrated in the Chicago metropolitan area, where cooperation is usually more difficult to obtain. The reasons for this rate were that the screener questionnaire was carefully pretested three separate times, the interviewers had substantial previous telephone experience, and advance postcards could be sent to respondents outside the

TABLE 1.1

SCREENER INTERVIEW RESULTS

Category	N	Percent
Total sample	7,956	
Nonhousing units or nonworking numbers	1,524	
Total housing units	6,432	100.0
Completed	5,214	81.1
Refused	892	13.8
Noncontacts or unavailable	326	5.1

city of Chicago because telephone listings were used in their selection. Random digit dialing was used in the city of Chicago because about 50 percent of the households have unlisted telephone numbers. This method precluded sending advance postcards to these households.

No major efforts were made to convert the refusals or to locate the remaining noncontacts. Past experience would suggest that the cooperation rate might have been increased to near 90 percent if these had been attempted, but costs would also have risen sharply. It is important to remember that when cooperation rates are discussed in Chapter 2, they refer to the households who cooperated on the initial screener. Thus, the approximately 7 percent of Illinois households without telephones as well as the noncooperators on the screener are excluded.

2. From this sample of 5,214, a disproportionate stratified sample of 1,446 households was selected (to obtain a final sample of about 1,200) using two stratifying variables:

a. Education of female head of household or spouse of male head

b. Level of health experience for the household in the previous year

There were four strata, each containing about 300 households:

Stratum 1: Low education, low health incidence
Stratum 2: Low education, high health incidence
Stratum 3: High education, low health incidence
Stratum 4: High education, high health incidence

Other variables such as household size, race, age of head and respondent, and geographic location and social class variables such as income and occupation were considered for stratification, but previous experience has indicated that these are less highly related to accuracy of diary keeping of medical events. These variables are considered in the analysis, instead of increasing the cost and difficulty of the initial screening by being used in that phase.

The definitions used for educational level and incidence of health experience were as follows:

Low education:	11 years or less
High education:	12 years or more
Low health incidence:	14 or fewer total health episodes in the past year, 6 or fewer times of limited activity, and 6 or fewer times a hospital was visited, for all household members combined.
High health incidence:	15 or more total health episodes in the past year, 7 or more times of limited activity, or 7 or more times a hospital was visited, for all household members combined.

A health episode was defined as an event that would require a diary entry if it occurred during the record-keeping period; included were contacts with health care providers for any reason as well as visits to the hospital and episodes of limited activity. Since episodes of limited activity and hospital visits were less frequent and more difficult to report, fewer such events were required to classify a household as having high health incidence.

The sample of 5,214 households was distributed as shown in Table 1.2.

TABLE 1.2

DISTRIBUTION OF SAMPLE BY STRATUM

Stratum	N	Sampling interval
1. Low education, low health incidence	941	2.61
2. Low education, high health incidence	460	1.28
3. High education, low health incidence	2,444	6.79
4. High education, high health incidence	1,369	3.80

To allow for possible moves, missing addresses, and other problems unrelated to cooperation, an initial sample selection of 360 was made from each stratum. This meant that the sampling intervals (and thus the weights) for the four strata were those shown in the last column of Table 1.2.

3. During the fall of 1976, an initial interview was conducted with all households, who had been randomly assigned to one of the following three treatments:

a. Three personal interviews at monthly intervals;

b. Recruited to keep diaries of medical experiences for three months with households informed at the end of the initial interview that they would receive compensation of $15, to be paid at the end of the three-month period;

c. Recruited to keep diaries with no compensation.

Within a stratum, about 100 households received each treatment. The forms used in this study were those used in the earlier study with minor modifications. Copies of these forms are included at the end of this report as Appendix A.

It can be seen in the forms that information was obtained for all household members. The questions used to define household membership are given in the telephone screening interview on page A2. These questions and the definition used are similar to those in the Health Interview Survey (HIS). As in most household surveys where a single informant supplies information about all household members, the interviewer asked to speak to the adult in the household who was most knowledgeable about the health of household members. In most cases, this was the female head or spouse of head.

The initial interview (pages A11-17) was modeled after the HIS so that comparisons between results from the initial and subsequent periods could be used to predict changes in current estimates of health episodes if panel procedures were adopted. After the completion of the initial interview, households were recruited for panel membership. It has been found that this sequence is the most effective because the rapport generated by the initial interview increases willingness to participate in a panel.

The major categories of health information collected for each household member were as follows:

Days felt ill but performed usual activities
Days stayed home from work or school or unable to do usual activities
Visits to health professionals
Visits for hospital care
Purchases of medical supplies
Payments to health care providers

Since the last of the initial interviews were conducted in early December 1976, the three-month data-collection period ended in early March 1977. The study was scheduled during the winter months because of an expectation that there would be a high level of respiratory illnesses during this period.

4. The Survey Research Laboratory attempted procedures for reducing costs with half the households in each treatment method. For the personal interviews, half the households were contacted by telephone rather than face-to-face on the initial and subsequent interviews. For the diaries, half the households were requested to mail diaries in rather than having the interviewer pick them up. Table 1.3 presents the proposed overall design for the study.

5. SRL attempted to maximize the diary mail-in cooperation rates by

TABLE 1.3

PROPOSED RESEARCH DESIGN

(Number of Households)

Method	Sample type			
	High health incidence		Low health incidence	
	High education	Low education	High education	Low education
Personal:	(100)	(100)	(100)	(100)
Face-to-face	50	50	50	50
Phone	50	50	50	50
Diary--compensation:	(100)	(100)	(100)	(100)
Pick-up	50	50	50	50
Mail-in	50	50	50	50
Diary--no compensation:	(100)	(100)	(100)	(100)
Pick-up	50	50	50	50
Mail-in	50	50	50	50
Total	300	300	300	300

conducting reminder phone calls to respondents whose diaries were not received within two weeks of the expected date.

The actual number of households by data-collection method and sample type varied slightly from the proposed study design shown in Table 1.3. The minimum initial number of households was as low as 50; the maximum was as high as 68. The variation was due both to differential losses resulting from moves in the various cells and to a policy that permitted households to be shifted from one method to another if the initial method was refused. Thus, 26 households were shifted from one method to another, primarily from diaries to telephone interviews.

There were no plans to validate the results from this general sample, in the same way that results from the earlier study were validated. Such validation, although not impossible, would have been extremely difficult and costly. In our judgment, the costs of obtaining the limited data that could have been validated would have substantially exceeded their value in the analysis. The major differences between diary and recall procedures are on items that cannot be validated.

Format of This Report

Chapters 2-4 present the findings of this study. Chapter 2 discusses the levels of cooperation by data-collection method and sample stratum, and Chapter 3 compares the levels of reported health events by the same methods and strata. Chapter 4 gives a cost analysis of the various methods and compares them on the basis of cost per completed case, ignoring issues of sample bias and level of reporting. In the final chapter, however, all these factors are compared simultaneously, and recommendations are made for the optimum procedure based on both cost and quality as determined from this study. Recommendations are also made for future research, based on what was learned here. A brief summary of the results of these chapters is given below.

Summary of Results

Cooperation

1. As seen in the earlier research on special samples, the levels of cooperation obtained with diary pick-up methods are as high as those obtained with repeated face-to-face or telephone interviews.
2. Almost all noncooperation occurs in the first month of the panel for both the diary and personal procedures. Losses in the second and third months are only between 1 and 2 percent of the sample.
3. Diary mail-in methods are substantially worse in obtaining household cooperation than are other data-collection methods.
4. Compensation has no significant effect on cooperation for diary pick-up methods but does have a significant effect for mail-in procedures.
5. There is no evidence that less-educated households with more health problems have any more difficulty with diaries than they do with face-to-face or telephone interviews. Cooperation was lower on the phone than with the diary pick-up methods, although the differences are not significant.

Reporting Levels

1. For the less salient medical events, especially days felt ill but performed usual activities, substantially higher reporting of events is obtained from diaries than from personal interviews. For the more salient events, such as visits to health professionals and hospitals,

the differences between diary and personal methods become insignificant. The greatest differences between personal and diary methods are observed in the first month of the panel. In subsequent months, the number of health events reported in diaries is lower than in the first month; this drop is similar to that observed in diary studies of other types of behavior. Diary methods yield more accurate reporting than do personal methods for household members other than the respondent. On personal interviews, the data about the respondent are considerably more complete than the data about other household members.

2. Diary households who are compensated consistently report higher levels of events than do noncompensated households. There are no consistent differences in reported levels between diary pick-up and mail-in procedures except for those caused by sample biases.
3. There are no differences in total household events reported by telephone and face-to-face methods, although there is the possibility that accuracy of reporting about individual members of the household differs between telephone and face-to-face procedures.
4. The same method effects on reporting levels are generally seen for all sample types. There is no evidence that education has an effect on diary keeping. There is some indication, however, that households with less education may be subject to larger response effects on the personal interview.
5. Diary households report slightly more purchases of medical supplies, but the number of payments to health care providers does not differ by data-collection method.
6. Reports on the details of a medical event or expenditure are consistently

more accurate in the diaries. As an illustration, there is evidence that respondents on the personal interviews misclassify a substantial proportion of over-the-counter medical supplies as being prescriptions. This may indicate a greater willingness by some respondents to report sensitive and less socially desirable behavior in diaries than in personal interviews. Some diary details, however, are obtained by recall when the diary is picked up by the interviewer.

7. Comparisons to data from the Health Interview Survey of the U.S. National Health Survey indicate that there is no difference in medical experiences between the sample of Illinois households used in this study and a national sample. Comparisons of the initial and unbounded interview to the panel results, however, indicate that some of the Health Interview Survey results may be too large because of telescoping, although the effects of telescoping and forgetting events may cancel each other.

Costs and Operational Issues

1. Looking only at costs and cooperation, the telephone procedure is the least expensive method that yields high cooperation.
2. Face-to-face interviews are more expensive than diary procedures except when compensation is used for diary pick-up households.
3. Diary mail-in procedures after an initial face-to-face interview are more expensive than telephone interviews but cheaper than all other methods.
4. Keeping control forms moving on schedule between the interviewer and the central office is a serious problem, especially when the mails are

moving slowly, such as during the Christmas holiday season. This could be solved by maintaining two copies of each control form.

5. The diaries that are picked up are the easiest to code, since they have the most complete and detailed information. This is due to interviewer editing conducted at the time of the monthly visit.

2. COOPERATION BY ALTERNATIVE DATA-COLLECTION METHODS

In this chapter, we present the cooperation rates for the initial interview and for the three months that households were asked to participate. The data are first split by sample type, since differential sampling rates were used. Then the differences in cooperation by data-collection method and by month are discussed. The reader is reminded that these cooperation rates are based on a sample of households who had already cooperated on an initial screening interview. The cooperation rate is defined as the number of completed interviews or diaries divided by the number of households selected for interviewing.

Cooperation by Sample Type

It may be seen in Table 2.1 that the highest cooperation rates were obtained from households with higher levels of education and higher incidence of health problems. The lowest cooperation was from households with lower education and lower incidence of health problems.

The differences are small and not statistically significant on the initial interview, but they become larger during the three months. Using a chi-square test, these differences are highly significant after three months. Overall, there is a difference of 12 percentage points between the 78 percent cooperation rate of households with more education and more health problems, compared to the 66 percent cooperation rate of those with less education and fewer health problems.

Although these results vary by data-collection method, as we shall see

TABLE 2.1

COOPERATION, BY SAMPLE TYPE AND MONTH

(Percent)

Sample type	Initial interview	Month			N
		1	2	3	
Low education:	87.9	75.1	71.1	67.9	675
Low health incidence	87.0	73.3	69.2	66.0	338
High health incidence	88.7	76.9	73.0	69.7	337
High education:	87.9	78.5	75.5	74.0	685
Low health incidence	84.5	74.3	71.0	69.6	335
High health incidence	91.1	82.6	79.7	78.3	350
χ^2 (3)	7.13	9.9	11.04	16.04	
Probability	.07	.025	.01	.001	

below, the effects of sample type are consistent over method; that is, there is little interaction between method and sample type.

The results are as expected for the effects of education with higher levels of cooperation from households having higher levels of education, but are the opposite of those predicted for levels of health problems. We had expected that households with more health problems would need to make more entries and that this added work load would reduce cooperation. In retrospect, it now appears that those with more health concerns found this study more salient and were therefore more willing to cooperate.

Cooperation by Method and Sample Type

Table 2.2 presents the key results of this chapter--household cooperation by method and month, controlling for sample type. The control is necessary, since cooperation did vary by sample type and the strata were not selected with equal probability. Nevertheless, the same results are observed for all four sample types.

Three major findings emerge from Table 2.2:

1. Diary pick-up methods obtain as high levels of cooperation as do repeated face-to-face or telephone interviews.
2. Diary mail-in methods are substantially worse in obtaining household cooperation than are the other methods.
3. Compensation has no significant effect on cooperation for diary pick-up methods but does have significant effect for mail-in procedures.

Initial Cooperation

There are no significant differences in the cooperation rates on the

TABLE 2.2

COOPERATION, BY SAMPLE TYPE, METHOD, AND MONTH

(Percent)

Sample type and method	Initial interview	Month			N
		1	2	3	
Low education, low health incidence:					
Face-to-face	89.3	83.9	78.6	78.6	56
Telephone	83.3	69.7	66.7	65.2	66
Diary pick-up--compensation	87.0	81.5	79.6	77.8	54
--no compensation	84.6	82.7	78.8	78.8	52
Diary mail-in--compensation	93.2	62.7	59.3	54.2	59
--no compensation	84.3	60.8	52.9	41.2	51
χ^2 (5)	5.28	14.2	17.47	29.74	
Probability	.40	.02	.005	<.001	
Low education, high health incidence:					
Face-to-face	91.6	90.0	85.0	83.3	60
Telephone	85.0	81.6	81.6	81.6	60
Diary pick-up--compensation	80.4	75.0	75.0	75.0	56
--no compensation	90.4	90.4	84.6	82.7	52
Diary mail-in--compensation	92.5	69.8	62.3	58.5	53
--no compensation	92.9	53.6	48.2	35.7	56
χ^2 (5)	7.66	30.85	31.25	47.81	
Probability	.18	<.001	<.001	<.001	
High education, low health incidence:					
Face-to-face	89.5	80.7	77.2	75.4	57
Telephone	85.5	82.3	82.3	82.3	62
Diary pick-up--compensation	79.6	75.9	74.1	72.2	54
--no compensation	78.9	75.4	75.4	73.7	57
Diary mail-in--compensation	86.3	70.6	64.7	62.7	51
--no compensation	87.0	59.3	50.0	48.1	54
χ^2 (5)	4.11	10.32	17.87	19.65	
Probability	.55	.07	.005	.002	
High education, high health incidence:					
Face-to-face	94.8	94.8	91.4	91.4	58
Telephone	88.2	85.3	83.8	82.4	68
Diary pick-up--compensation	94.7	94.7	94.7	94.7	57
--no compensation	90.0	88.0	86.0	86.0	50
Diary mail-in--compensation	88.3	73.3	66.7	61.7	60
--no compensation	91.2	59.6	56.1	54.4	57
χ^2 (5)	3.63	38.3	40.13	48.03	
Probability	.60	<.001	<.001	<.001	

initial interview by method. Except for those households where both the initial and subsequent interviews were by telephone, all initial interviews were conducted face-to-face and were identical, regardless of the method to be used later. In some earlier studies in obtaining food expenditure data by diary methods, there was evidence that interviewer knowledge of the treatment that households would receive later had an effect on initial cooperation. In this study of health data collection, no such evidence of initial interviewer effects is observed.

There is also no significant difference between cooperation on the initial interview when conducted face-to-face and when conducted by telephone.

Cooperation rates vary from 7 to 13 percentage points within types, ranging from lows just under 80 percent to highs in the low 90's, but none of these differences is even near to significance on the chi-square tests.

Cooperation on Diary Mail-in Procedures

Diary mail-in procedures are attractive from a cost standpoint because they eliminate the need for interviewer visits after the initial interview. The results in Table 2.2 indicate, however, that this reduced cost is coupled with significantly reduced cooperation rates for every sample type. The highly significant chi-square values observed are entirely due to the diary mail-in procedures. Overall, while cooperation after three months was about 80 percent for the other methods, averaging over sample type, it was only 54 percent for the diary mail-in procedures.

The unweighted results summarized by method are presented in Table 2.3, although the significance tests were conducted on the uncombined

TABLE 2.3
COOPERATION, BY METHOD AND MONTH
(Percent)

Method	Initial interview	Month 1	Month 2	Month 3	N
Personal:					
Face-to-face	91.3	87.4	83.1	82.3	256
Telephone	85.5	79.7	78.5	77.7	231
Diary:					
Pick-up	85.6	82.9	81.0	80.1	432
Compensation	85.5	81.9	81.0	80.1	221
No compensation	85.8	83.9	81.0	80.1	211
Mail-in	89.6	63.7	57.6	52.2	441
Compensation	90.1	69.1	63.2	59.2	223
No compensation	89.0	58.3	51.8	45.0	218

results of Table 2.2. When each sample type is weighted to account for the differential rates of selection, the differences between the weighted and unweighted summaries are quite small. For this reason, only the unweighted results are reported here.

Given these results, diary mail-in procedures do not appear to be an effective method for collecting health data unless combined with interviewer pick-up methods. That is, these procedures might still be efficient if methods could be developed for quickly sending an interviewer to collect a diary if it was not received in the mail. However, it might well be that such combined methods would be more difficult to control and thus be less cost-effective than a simple diary pick-up or personal interview method.

Cooperation on Diary Pick-up and Personal Methods

There are no significant differences between the cooperation rates for the diary pick-up procedure and for personal methods (face-to-face or telephone). The differences in levels of data reported are given in Chapter 3, and the cost differences are discussed in Chapter 4. Nevertheless, these results again indicate (as did results from the earlier study in Marshfield, Wisconsin, and Chicago) that households are willing and able to keep health diaries for at least three months.

As in the earlier research, almost all the attrition is in the initial interview for diary keeping. The loss of households is only 5.5 percentage points, from 85.6 percent on the initial interview to 80.1 percent after three months for the diary pick-up method. A similar drop is observed for the telephone procedure. Face-to-face interview households appear less likely to refuse initially but are slightly more likely to refuse the Month 1 and Month 2 interviews, so that the cooperation after three months is similar to that for the diary pick-up and phone methods. Even the earlier differences are not statistically significant.

The low drop-out rate after the initial period indicates that the three-month record-keeping period might be extended with little difficulty. The next extension attempted might be to six consecutive months or to three or four months and an additional three or four months a year later, using the same pattern as in the Current Population Survey.

There is no evidence that even the less-educated households with more health problems have any more difficulty with diaries than they do with face-to-face or telephone interviews. The procedure adopted initially was to offer to switch methods for households who refused the assigned method. Only 26 households asked that the method be switched, and their subsequent cooperation was lower than for other households. There were substantial problems in keeping the control records straight on these respondents, and, in retrospect, it is not clear that it was worth the effort. For the less-educated households with more health problems, cooperation was lower for the telephone interview than for the diary methods, although the differences are not significant.

Effects of Compensation on Cooperation

A surprise in this study was the lack of effect that compensation had on cooperation in keeping diaries that were picked up. In the earlier health diary research in Marshfield, Wisconsin, and Chicago, compensation had improved cooperation by about 10 percentage points, as may be seen in Table 2.4. Similar results had been observed on consumer expenditure surveys using diaries. In this study, however, there is no evidence of any effect of compensation--either initially or after three months--for diaries

TABLE 2.4

EFFECTS OF COMPENSATION ON COOPERATION IN KEEPING DIARIES IN MARSHFIELD AND CHICAGO, 1973-74

(Percent Cooperating)

Location and compensation procedure	Initial	Month			N
		1	2	3	
Marshfield:					
Compensation	89.4	87.4	86.2	86.2	160
No compensation	86.4	85.1	81.3	80.1	161
Chicago:					
Compensation	76.4	71.8	71.2	68.8	170
No compensation	66.9	58.7	56.9	56.3	167

that were picked up. The difference of 14 percentage points owing to compensation for diaries that were mailed in is marginally significant, but even with compensation, the mail-in procedure resulted in substantially lower levels of cooperation. We can only speculate on the reasons for the differences. Health topics are obviously more salient than the purchasing of low-cost food items, and keeping health records is an easier task because there are much fewer entries required for most households.

The earlier Marshfield and Chicago samples were of special populations, and possibly the design of the study sensitized interviewers to the effects of compensation. Some indication of this is seen in Table 2.4. The 9-percentage-point difference on the initial interview between the cooperation rates of Chicago households who were and were not compensated accounts for a major part of the 13-percentage-point difference after three months. Similarly, in Marshfield, of the final difference in cooperation of 6 percentage points, 3 percentage points are due to the difference on the initial interview. Since all households received identical initial interviews, the differences appear to be the result of interviewer expectations about future treatments. The net effects, controlling for initial effects, are only 3 to 4 percent.

The weight of the evidence now suggests that compensation has no significant effect on cooperation for a general population sample asked to keep diaries for up to three months if the diaries are picked up. Since compensation increases costs substantially, there seems no reason to compensate households for health studies unless the accuracy of recording is improved. We examine in the next chapter the effect of compensation on reporting accuracy. Compensation in some form might improve cooperation if households were asked to keep diaries for longer periods, but this would require additional experimentation to determine. There is no indication in this study that the effect of compensation changes by month.

Summary

1. As seen in the earlier research on special samples, the levels of cooperation obtained with diary pick-up methods are as high as those obtained with repeated face-to-face or telephone interviews.
2. Almost all noncooperation occurs in the first month of the panel for both the diary and personal procedures. Losses in the second and third months are only between 1 and 2 percent of the sample.
3. Diary mail-in methods are substantially worse in obtaining household cooperation than are other methods.
4. Compensation has no significant effect on cooperation for diary pick-up methods but does have a significant effect for mail-in procedures.
5. There is no evidence that less-educated households with more health problems have any more difficulty with diaries than they do with face-to-face or telephone interviews. Cooperation was lower on the phone than with the diary methods, although the differences are not significant.

3. LEVEL OF REPORTING OF MEDICAL EVENTS BY METHOD

In this chapter we consider the effects that the data-collection methods discussed in Chapter 2 have on the level of reporting medical events. Since we have already noted that there are differences in levels of cooperation, it will not be possible to attribute the differences in reporting level only to response effects. The differences are due to a combination of response effects and sample biases. Ultimately, however, it is the combined effects that are of primary interest. The results are reported by sample type, by data-collection method, and by sample and method to look for possible interactions.

The medical events reported in this chapter are the following:

1. Felt ill but performed usual activities
    - A. Number of days
    - B. Type of illness
    - C. Treatment of illness
2. Stayed home from work or school or unable to do usual activities
    - A. Number of days
    - B. Type of illness
    - C. Number of days spent in bed
    - D. Treatment of illness
3. Visits to health professionals (including doctors, dentists, optometrists, and chiropractors)
    - A. Number of visits
    - B. Type of health professional visited
    - C. Reason for visit
4. Visits for hospital care (including outpatient visits, clinic visits, and nursing home care)

5. Purchases of medical supplies

    A. Number of supplies obtained
    B. Type of supplies obtained
    C. Covered or not covered by insurance
    D. Price

6. Payments to health care providers

    A. Number of payments
    B. Amount paid
    C. Covered or not covered by insurance

Data on days stayed home, visits to health professionals, and visits for hospital care are also available from the initial interview. This interview was very similar to the current Health Interview Survey, so that differences between the initial interview and the panel results would indicate differences that would exist if panel procedures were used instead of the current HIS procedures. Some additional comparisons are made to data reported from the Health Interview Survey.

In a later section of this chapter, reporting levels by whether the household member is an adult or child are compared by data-collection method. Then the results on reporting levels are summarized by presenting regression analysis, where the dependent variables are those listed above and the independent variables are data-collection method, household characteristics, and household member characteristics. Finally, data are presented on the role of the interviewer in completing missing details in diaries.

No general statement can be made about the results. For some medical events, there is virtually no difference by method; for others, the differences are substantial. Therefore, each of the events is discussed separately.

Felt Ill but Performed Usual Activities

Number of Days

A major advantage of diary procedures is that they may be used to obtain data on less salient events that would be difficult for the respondent to remember otherwise. One would expect respondents to report substantially more days on which they felt ill but performed usual activities when using diaries than in recall interviews. Table 3.1 indicates this to be the case: Over the three-month period, households keeping diaries reported over 80 percent more such days than did households receiving personal interviews. This difference of means is, of course, highly significant ($p < .001$ on a t-test).

The comparison by month reveals that the difference between diary and personal interview reports is greatest in Month 1, when diary households reported an average of 8.74 days when someone in the household felt ill but performed usual activities, more than double the 3.66 days reported on personal interviews. The number of days reported in the diaries dropped to about 6 in Months 2 or 3, illustrating a common phenomenon in diary reporting. (We shall see other examples of this later in the chapter.) In diary studies of consumer expenditures, the first period is always found to be higher than the second or later periods (see Pearl, 1968). The personal interviews do not exhibit this drop; the monthly averages are quite stable with no month being more than .25 away from the three-month average of 3.75.

One other important difference between the methods is given in Table 3.1--the percentage of illnesses where the length could not be determined. In personal interviews, these were events where the respondent knew that an illness had occurred but did not know its length. For the diaries,

TABLE 3.1

NUMBER OF DAYS FELT ILL BUT PERFORMED USUAL ACTIVITIES

Method and length	Month 1	Month 2	Month 3	Three-month average
Personal:				
Mean days	3.66	3.62	3.97	3.75
σ	8.14	7.92	8.90	
Percent undetermined length	3.7%	6.8%	8.1%	
N	(406)	(393)	(392)	
Diary:				
Mean days	8.74	6.13	6.06	6.98
σ	11.09	8.84	9.30	
Percent undetermined length	38.2%	30.1%	32.2%	
N	(641)	(603)	(572)	
Ratio diary/personal	2.39	1.69	1.53	1.86

these consisted of events for which either a beginning or ending date was given, but not both. It may be seen that about one-third of the illnesses reported in the diaries were of undetermined length, substantially more than for personal interviews. It is possible that this resulted from the illness having started before the record keeping began or having ended after the close of the record-keeping period. Another possibility is that the illness lasted one day or less, so that the respondent thought that recording one date was sufficient.

The percentage of illnesses of undetermined length does not include households where no one felt ill but performed usual activities: The figure is obtained by dividing the number of events where length could not be determined by the sum of the non-zero events where length could be determined plus the events where length could not be determined. Symbolically,

$$P = \frac{n_u}{n_d + n_u}$$

The estimate of mean days is found by imputing the mean number of days for determined events to the undetermined events. Symbolically,

$$\bar{x} = \bar{x}_d \quad \frac{n_d + n_u}{n_d}$$

where $\bar{x}_d$ = mean length for events where length was determined;

n_u = number of undetermined events; and

n_d = number of determined events.

The same procedure described here is also used in the next main section dealing with medical events that caused household members to stay home from work or school or prevented them from doing their usual activities.

Differences by diary method. Table 3.2 indicates that the three-

TABLE 3.2

NUMBER OF DAYS FELT ILL BUT PERFORMED USUAL ACTIVITIES, BY METHOD

Method	Month 1	Month 2	Month 3	Three-month average
Personal:				
Face-to-face	4.31 (201)[a]	3.29 (192)	3.58 (190)	3.73
Telephone	3.02 (205)	3.91 (201)	4.36 (202)	3.76
Diary:				
Pick-up	7.59 (358)	5.73 (347)	5.26 (342)	6.19
Mail-in	10.14 (283)	6.73 (256)	7.36 (230)	8.08
Compensation	10.57 (334)	6.41 (318)	8.18 (305)	8.39
Pick-up	8.92 (180)	5.87 (176)	6.73 (173)	7.17
Mail-in	12.62 (154)	7.16 (142)	10.31 (132)	10.03
No compensation	6.83 (307)	5.81 (285)	3.80 (267)	5.48
Pick-up	6.36 (178)	5.53 (171)	3.79 (169)	5.23
Mail-in	6.98 (129)	6.03 (114)	3.81 (98)	5.61

[a] The case base for each cell is given in parentheses.

month average for households who mailed in diaries was about eight days on which someone felt ill but performed usual activities, compared to six days for households where the diaries were picked up. The most likely explanation is not that this is a reporting effect but that it is due to the differential cooperation rates. Cooperation by mail was far lower (as indicated in Chapter 2), but the households who did respond by mail were more interested in illness and thus reported higher levels. This same result is often seen in mail studies, where those most interested are likeliest to respond.

The differences due to compensation, however, are primarily the result of differences in the amount of effort expended by those who kept diaries and not the result of differential cooperation. Compensated households reported an average of three more days on which someone felt ill than did noncompensated households. Similar results for other health events will be seen in subsequent sections. Although differences in the number of households cooperating are not significant by compensation, the differences seen in Table 3.2 are significant at the .01 level.

As may also be seen in Table 3.2, the joint effects of whether the diary households were compensated or not and whether the diaries were picked up or mailed in are additive and show no interactions. Thus, the highest reporting is obtained from the households who were compensated and mailed in their diaries, but it should be remembered again that this is a joint effect of sample biases and accuracy of record keeping.

Differences by personal method. Unlike the diary procedures, where there are large method effects, Table 3.2 shows no significant differences between the number of days felt ill reported in face-to-face and telephone interviews. The three-month averages for face-to-face and phone interviews are identical to the first decimal but far lower than any of the diary procedures.

Differences by sample type and method. It is evident from Table 3.3 that differences between the number of days felt ill reported by diary and personal methods are greater for respondents with more education. The reason for this, however, is quite unexpected. There are only small and nonsignificant differences between the number of days felt ill reported in diaries by households with less and by those with more education. However, there are larger differences by education in the personal interview situation. Households with less education reported substantially more illness days then did households with more education.

As would be expected, households who reported higher levels of medical events on the screener interview continued to report higher numbers of illness days, regardless of data-collection method. The method difference between diaries and personal interviews is slightly higher for households with lower levels of incidence. The important result, however, is that significantly higher numbers of illness days were reported in the diaries by every sample type and for every month.

Type of Illness When Performed Usual Activities

The reason for the differences in total days felt ill reported by diary and by personal methods may be that diary households reported more of all types of illness or that certain kinds of ailments reported in diaries are likely to be omitted in personal interviews. Tables 3.4 and 3.5 indicate that most of the differences are due to four types of illness: colds,

TABLE 3.3

NUMBER OF DAYS FELT ILL BUT PERFORMED USUAL ACTIVITIES, BY SAMPLE TYPE AND METHOD

Method	Low education				High education			
	Month 1	Month 2	Month 3	Three-month average	Month 1	Month 2	Month 3	Three-month average
Personal	$5.07_{(195)}$[a]	$4.74_{(188)}$	$4.34_{(188)}$	4.72	$2.52_{(211)}$	$2.61_{(205)}$	$3.66_{(204)}$	2.93
Diary	$8.24_{(312)}$	$6.06_{(291)}$	$6.06_{(270)}$	6.79	$9.19_{(329)}$	$6.24_{(312)}$	$6.06_{(303)}$	7.16
Ratio diary/ personal	1.63	1.28	1.40	1.44	3.65	2.39	1.66	2.44
	Low health incidence							
Personal	$3.59_{(93)}$	$4.18_{(88)}$	$2.89_{(87)}$	3.55	$1.88_{(98)}$	$1.68_{(95)}$	$2.37_{(95)}$	1.98
Diary	$6.12_{(155)}$	$5.07_{(146)}$	$4.83_{(136)}$	5.34	$8.42_{(152)}$	$5.99_{(143)}$	$4.86_{(138)}$	6.42
Ratio diary/ personal	1.70	1.21	1.67	1.50	4.45	3.57	2.05	3.24
	High health incidence							
Personal	$6.44_{(102)}$	$5.28_{(100)}$	$5.88_{(100)}$	5.77	$3.08_{(113)}$	$3.38_{(110)}$	$4.72_{(109)}$	3.73
Diary	$9.93_{(157)}$	$7.06_{(145)}$	$7.08_{(134)}$	8.02	$9.79_{(177)}$	$6.44_{(169)}$	$7.08_{(165)}$	7.77
Ratio diary/ personal	1.54	1.34	1.27	1.39	3.18	1.91	1.50	2.08

[a] The case base for each cell is given in parentheses.

TABLE 3.4

NUMBER OF DAYS FELT ILL BUT PERFORMED USUAL ACTIVITIES, BY TYPE OF ILLNESS AND METHOD

Type of illness	Month 1		Month 2		Month 3		Three-month average	
	Personal	Diary	Personal	Diary	Personal	Diary	Personal	Diary
Cold, sore throat	1.04	2.57	.84	2.16	.80	2.07	.89	2.27
Flu	.39	.20	.15	.34	.18	.22	.24	.25
Headache and sinus	.21	1.10	.25	.58	.18	.51	.21	.73
Backache	.13	.16	.07	.11	.28	.05	.16	.11
Arthritis	.13	.41	.11	.16	.18	.11	.14	.23
Pain	.05	.63	.19	.21	.17	.18	.14	.34
Indigestion	.03	.19	.12	.16	.02	.16	.06	.17
Injury	.25	.25	.24	.16	.55	.20	.35	.20
Other	1.43	3.23	1.65	2.25	1.61	2.56	1.56	2.68
Total	3.66	8.74	3.62	6.13	3.97	6.06	3.75	6.98
N	(260)	(996)	(201)	(694)	(197)	(605)		

TABLE 3.5

TYPE OF ILLNESS WHEN FELT ILL BUT PERFORMED USUAL ACTIVITIES, BY METHOD

(Percent of Total Events)

Type of illness	Month 1		Month 2		Month 3		Three-month average	
	Personal	Diary	Personal	Diary	Personal	Diary	Personal	Diary
Cold, sore throat	36.2	31.0	38.2	34.7	28.9	31.9	34.2	32.7
Flu	16.5	4.2	7.5	7.3	11.7	3.6	13.0	5.1
Headache and sinus	5.8	23.7	8.0	20.0	6.1	18.6	6.5	20.8
Backache	3.8	2.0	4.0	1.4	3.6	1.7	3.6	1.7
Arthritis	1.9	1.8	2.5	1.7	2.0	2.3	2.4	2.1
Dizziness	.8	.3	.5	.1	.5	1.0	.6	.5
Pain	1.5	8.7	6.0	6.8	4.1	6.9	3.8	7.5
Indigestion	3.1	5.2	3.0	4.6	2.5	5.1	2.9	4.7
Injury	3.5	2.7	4.5	1.7	9.1	1.7	5.6	2.6
Other	26.9	20.4	25.8	21.7	31.5	27.2	27.4	22.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

headaches, pain, and indigestion. These are reported at a much higher rate in the diaries.

The biggest relative difference is in the reporting of headaches. As can be seen in Table 3.4, diary households reported that members had a headache an average of .73 days each month, while the average for personal interviews was only about .21 days per month. Table 3.5 indicates that headaches accounted for about 21 percent of all illnesses for diary households, but only for about 6 percent of illnesses in the personal interviews. Here it seems evident that respondents on personal interviews are likely either to forget headaches or to believe that headaches are not sufficiently important to mention if the household member was able to perform his or her usual activities.

Similarly, personal interview respondents are less likely to mention pain when no cause is specified or to mention indigestion at all. Indigestion, in particular, seems to be something that is not mentioned to an interviewer, although it appears in the diaries.

Flu was mentioned with equal frequency in diaries and personal interviews, but the mean number of illness days due to colds was more than twice as large for diary households (2.27) as for personal interview households (.89).

Looking at the percentage of illness events in Table 3.5, about the same percentage of events due to colds were reported in both the personal interviews and diaries, while personal interview households reported a higher percentage (but the same number of days) of flu. Given the known widespread public confusion between colds and flu, it is hard to know what to conclude from these differences. Since the flu is generally considered more serious than a cold, these results tend to confirm the data for headaches and indigestion that the least serious events are most likely to be forgotten or not mentioned in the personal interviews.

Treatment of Illness When Performed Usual Activities

The treatment given for the illnesses reported above also differs by method, as seen in Table 3.6. Thus, diary respondents reported a much higher percentage of nonprescription medicines used, whereas respondents to the personal interviews reported a higher percentage of prescriptions. One might think that the reason was because nonprescription medicines are the most common treatments for headaches and indigestion, which were reported more frequently by diary households than by personal interview households.

We can see from Table 3.7, however, that this is not the reason. For every illness, personal interview households reported a higher percentage of prescriptions than did diary households. Since it is unlikely that diary families erred in their classification, one can conclude that personal interview households forgot what was actually used and substantially overstated the use of prescriptions. The same pattern is seen in consumer expenditure studies, where memory errors lead to substantial errors in the details of purchase, such as overstatement of best-known brands. There may also be some element of social desirability in the answers on the personal interview. That is, it appears that respondents interviewed in person perceive that reporting use of a prescription drug is more socially desirable than reporting use of a nonprescription drug.

Stayed Home from Work or School or Unable To Do Usual Activities

Number of Days

As medical events become more serious and more salient, the differ-

TABLE 3.6

TREATMENT WHEN FELT ILL BUT PERFORMED USUAL ACTIVITIES, BY METHOD

(Percent Using Each Treatment)

Treatment	Month 1		Month 2		Month 3		Three-month average	
	Personal	Diary	Personal	Diary	Personal	Diary	Personal	Diary
Prescription	39.1	19.8	36.4	20.4	33.2	26.5	36.2	22.2
Other medicine	37.0	59.4	35.9	60.6	36.4	57.0	36.4	59.0
Other treatment	15.2	6.2	16.8	4.9	15.5	5.2	15.8	5.4
None	15.2	16.9	17.4	15.0	23.0	13.0	18.5	15.0
Total[a]	106.5	102.3	106.5	100.9	108.1	101.7	106.9	101.6
N	(243)	(979)	(184)	(687)	(187)	(593)		

[a] Adds to more than 100 percent because of multiple treatments.

TABLE 3.7

USE OF PRESCRIPTIONS WHEN FELT ILL BUT PERFORMED USUAL ACTIVITIES, BY TYPE OF ILLNESS AND METHOD

(Percent Using Prescriptions)

Type of illness	Month 1		Month 2		Month 3		Three-month average	
	Personal	Diary	Personal	Diary	Personal	Diary	Personal	Diary
Cold, sore throat	52.8	47.7	38.8	27.9	30.6	32.5	40.7	36.0
Flu	45.7	27.2	38.9	22.8	53.3	72.7	46.0	40.9
Backache	80.0	37.1	66.7	*	37.5	0	61.4	18.6
Headache and sinus	37.9	29.4	48.5	15.8	53.3	21.1	46.6	22.1
Arthritis	66.7	76.9	55.6	50.0	100.0	65.2	74.1	64.0
Pain	25.0	37.5	71.4	15.2	52.9	19.3	49.8	24.0
Indigestion	50.0	23.9	42.9	11.9	72.7	26.1	55.2	20.6
Injury	69.2	25.7	28.6	12.5	68.4	66.7	55.4	35.0
Other	66.7	43.6	87.1	34.6	72.7	46.2	75.5	41.5

*No data.

ences between the diary and personal interview methods usually become smaller. Table 3.8 shows that the overall difference between personal interviews and diaries in the reported number of days stayed home from work or school or unable to do usual activities is only 14 percent; diary households reported an average of 3.87 days, compared to 3.39 days reported in personal interviews.

The difference is substantial and significant only in the first month, when diary households reported 4.59 days of incapacity each month, compared to 3.15 days reported in the personal interviews. In the second and third months, however, there are virtually no differences. The large difference between the diary reporting in the initial month and in the latter two months was also observed in the category "felt ill but performed usual activities." Unlike that category, which is to some extent subjective, it seems very unlikely that households would overreport days unable to do usual activities. Thus, the best data are from the first month, and the drop in later months provides some evidence of the effects of fatigue on the diary keepers, although seasonal variability may confound this conclusion.

An additional comparison can be made to the number of days of incapacity reported in the initial interview. As in the Health Interview Survey, the question asked about disability over the past two weeks. By extrapolation, the estimate for the month prior to the initial interview is an average of 4.13 disability days per household. This average is 22 percent higher than the three-month average for personal interviews and 31 percent higher than the Month 1 average for personal interviews. Differences between diary reports and the initial interview are not significant; however, the Month 1 mean for diary households is higher than the mean for initial interviews, but this is reversed in Months 2 and 3.

TABLE 3.8

NUMBER OF DAYS STAYED HOME FROM WORK OR SCHOOL OR UNABLE TO DO USUAL ACTIVITIES

Method and length	Month 1	Month 2	Month 3	Three-month average
Personal:				
Mean days	3.15	3.72	3.31	3.39
σ	6.95	8.50	7.61	
Percent undetermined length	.6%	9.6%	3.6%	
N	(406)	(393)	(392)	
Diary:				
Mean days	4.59	3.55	3.47	3.87
σ	9.23	8.81	6.28	
Percent undetermined length	23.6%	20.4%	19.3%	
N	(641)	(603)	(573)	
Ratio diary/personal	1.46	.95	1.05	1.14
Initial interview				4.13
Health Interview Survey[a]				4.62

[a] Source: U.S. National Center for Health Statistics (1977, p. 3, Table B). Days per person per year converted to days per household per month.

The estimate for household disability days taken from the 1975 Health Interview Survey (U.S. National Center for Health Statistics, 1977) is 4.62 days per month. This is not significantly different from the mean of 4.13 for the initial interview in the present study. These comparisons indicate that essentially the same variables are being measured and that the geographic limitations of this sample do not appear to be very serious.

Some discussion of what these differences mean may be useful, even though speculative. The data from the initial interview are for a shorter period of time and are unbounded. There is some probability of telescoping; that is, events that occurred earlier are remembered as occurring in the two-week reporting period. For the subsequent personal interviews, telescoping is eliminated by bounding each interview by the previous interview. Simultaneously, there is a greater likelihood of forgetting an event in a month than in a two-week period. Thus, the finding that the mean for initial interviews is greater than the means for the bounded interviews is expected.

Differences by diary method. The discussion so far on household disability days has considered only the overall differences between diary and personal interview methods. These differences are considerably larger if one compares diary households who were compensated and all other households. As with illness days that did not result in incapacity, households who were compensated reported significantly more disability days in their diaries than did diary households who were not compensated, as seen in Table 3.9. The diary households who were not compensated did not report significantly different mean days than did households on the personal interview. The three-month mean for compensated diary households is 4.68, which is 44 percent higher than the mean of 3.25 for the remaining sample groups.

TABLE 3.9

NUMBER OF DAYS STAYED HOME FROM WORK OR SCHOOL OR UNABLE TO DO USUAL ACTIVITIES, BY METHOD

Method	Month 1	Month 2	Month 3	Three-month average
Personal:				
Face-to-face	3.31 (201)[a]	4.09 (192)	3.15 (190)	3.52
Telephone	2.99 (205)	3.29 (201)	3.45 (202)	3.24
Diary:				
Pick-up	4.71 (358)	4.36 (347)	3.45 (342)	4.17
Mail-in	4.35 (283)	2.88 (256)	3.45 (230)	3.56
Compensation	5.64 (334)	4.72 (318)	3.68 (305)	4.68
Pick-up	6.10 (180)	3.69 (176)	5.33 (173)	5.04
Mail-in	4.36 (154)	3.62 (142)	4.02 (132)	4.00
No compensation	3.46 (307)	2.29 (285)	3.24 (267)	3.00
Pick-up	2.76 (178)	3.22 (171)	2.75 (169)	2.91
Mail-in	4.34 (129)	3.19 (114)	142 (98)	2.98

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[a] Case base for each cell is given in parentheses.

Aside from compensation, the differences between diary pick-up and mail-in procedures are small and not significant and are in the opposite direction than were illness days in the previous section. The differences between face-to-face and telephone procedures are also small and not significant.

Even for compensated diary households there is a steady decline in mean days reported from 5.64 in Month 1 to 4.72 in Month 2 to 3.68 in Month 3. Assuming that this is not due to seasonal factors, it indicates some fatigue even for households who received compensation. (Since most respondents started keeping diaries in October and November, seasonal effects would typically cause an increase rather than a decline, since acute illnesses peak in December and January.)

If one assumes that the most accurate reporting is obtained from the first month of diary households who receive compensation and notes that these households also report significantly more than do households on the initial two-week interview, then one can conclude that there is some net underreporting on the Health Interview Survey, even though telescoping compensates for some of the omissions. However, using a three-month average, the difference between the initial interview and the reports of compensated diary households is not significant.

Differences by sample and method. As with the illness days discussed earlier, the same results are observed in Table 3.10, which controls for both sample type and method, as are seen in Table 3.9. That is, there is no significant interaction between samples and methods. As expected, high incidence households reported more incapacity days than did low incidence households. Households with less education consistently reported more

TABLE 3.10

NUMBER OF DAYS STAYED HOME FROM WORK OR SCHOOL OR UNABLE TO DO USUAL ACTIVITIES, BY SAMPLE TYPE AND METHOD

Method	Low education				High education			
	Month 1	Month 2	Month 3	Three-month average	Month 1	Month 2	Month 3	Three-month average
Personal	3.78	4.58	3.47	3.94	2.57	2.95	2.98	2.83
Diary	5.66	4.43	3.57	4.55	3.76	2.90	3.43	3.36
Ratio diary/ personal	1.50	.97	1.03	1.15	1.46	.98	1.15	1.19
	Low health incidence							
Personal	3.21	2.45	2.87	2.84	1.38	1.74	1.32	1.48
Diary	3.22	3.74	2.59	3.18	2.28	2.01	2.29	2.19
Ratio diary/ personal	1.00	1.53	.90	1.12	1.65	1.16	1.73	1.48
	High health incidence							
Personal	4.29	6.58	4.00	4.96	3.60	3.97	4.42	4.00
Diary	7.86	5.13	4.53	5.84	5.11	3.69	4.42	4.41
Ratio diary/ personal	1.83	.78	1.13	1.17	1.42	.93	1.00	1.10

incapacity days than did households with more education, but this is a substantive and not a methodological difference. For all sample groups, reporting was higher for the average of the three months from diary households than from households who were interviewed in person. As before, this difference is sharpest for all samples in the first month.

Type of Illness When Stayed Home

The differences between diary and personal methods observed above on types of illnesses for days felt ill but performed usual activities are also seen for days stayed home or could not do usual activities, but the magnitude of differences is considerably reduced. As Tables 3.11 and 3.12 show, diary households still report more days due to colds, headaches, pain, and indigestion. Except for these relatively small differences, the types of illness given are the same for diary and personal methods. It appears that as the illnesses become more serious and disrupt usual activities, method effects due to diary or personal interviews become relatively less important in determining reports of the type of illness.

Number of Days Spent in Bed

The seriousness and saliency of days spent in bed is even higher than days spent home, so one might expect that differences between personal and diary procedures would be even smaller for these types of medical events. This is not the case: The differences are substantially larger. To a large extent this appears to be a function of the slightly different ways in which the question was asked. In the diaries, households who reported that someone in the household stayed home from work or school or could not do usual activities were then asked to make a check if that person stayed in

TABLE 3.11

NUMBER OF DAYS STAYED HOME OR UNABLE TO DO USUAL ACTIVITIES, BY TYPE OF ILLNESS AND METHOD

Type of illness	Month 1		Month 2		Month 3		Three-month average	
	Personal	Diary	Personal	Diary	Personal	Diary	Personal	Diary
Cold, sore throat	.46	.91	.51	.79	.43	.87	.47	.86
Flu	.78	.67	.61	.59	.54	.57	.64	.61
Headache and sinus	.03	.20	.03	.29	.05	.16	.04	.22
Pain	.04	.54	.12	.25	.19	.17	.12	.32
Indigestion	.03	.13		.09		.12	.01	.11
Backache	.01	.06	.01	.09	.02	.06	.01	.07
Arthritis	.02	.06	.15	.02	.14	.15	.10	.08
Injury	.23	.20	.27	.16	.39	.20	.30	.19
Other	1.35	1.82	2.02	1.27	1.55	1.17	1.70	1.41
Total	3.15	4.59	3.72	3.55	3.31	3.47	3.39	3.87
N	(259)	(582)	(221)	(413)	(223)	(425)		

TABLE 3.12

TYPE OF ILLNESS WHEN STAYED HOME FROM WORK OR SCHOOL OR UNABLE TO DO USUAL ACTIVITIES, BY METHOD

(Percent of Total Events)

Type of illness	Month 1		Month 2		Month 3		Three-month average	
	Personal	Diary	Personal	Diary	Personal	Diary	Personal	Diary
Cold, sore throat	29.0	24.2	27.1	27.6	22.4	28.7	26.3	25.4
Flu	29.7	23.6	25.3	21.8	30.5	20.2	27.9	20.7
Headache and sinus	2.7	8.0	3.7	7.5	2.6	8.0	3.1	7.4
Pain	1.2	8.4	3.2	7.7	4.5	4.2	3.0	6.4
Indigestion	2.3	6.4	.9	4.8	.9	5.2	1.4	5.2
Backache	.8	1.9	.9	1.9	1.3	1.4	1.0	1.6
Dizziness	.8	1.4		1.2		2.6	.3	1.7
Arthritis	.8	.3	1.8	1.0	2.2	2.4	1.6	1.2
Injury	6.2	3.1	5.0	4.1	7.2	3.3	6.2	3.3
Other	26.5	22.7	32.1	22.4	28.4	24.0	29.2	27.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

bed all or part of the day. If a person was ill for several days and stayed in bed for even part of one day, all the days that the person stayed home would be counted as bed days. In the personal interviews, however, respondents were asked how many days a household member stayed home and then were asked, "During how many of those days did ______ have to spend most or all of the day in bed?"

Table 3.13 gives the comparisons for bed days between personal interviews and diaries by data-collection method. Over the three months, the average bed days reported in the diaries is 81 percent higher than the average for personal interviews, with the greatest difference seen in the first month. Again there are no significant differences in the personal method between face-to-face and telephone procedures, although the face-to-face average is slightly higher in each of the three months.

The same relationships are seen between the alternative diary procedures that were observed in Table 3.9 for days stayed home. Households who received compensation reported substantially more bed days, but the ratio of compensated to noncompensated remains 1.56 for both days stayed home and bed days, indicating no independent effect of staying in bed. Similarly, the differences between diary pick-up and mail-in procedures due to sample biases are very similar for days stayed home and bed days.

Comparisons between the initial unbounded interview and the personal interviews indicate that, as with days stayed home, the bounded personal interviews yielded a slightly lower average of 1.58 days, compared to 1.81 days on the initial interview. The estimate from the Health Interview Survey of 2.04 days per month is very close to the results from the initial interview. Here, because of the difference in definition, the number of bed

TABLE 3.13

NUMBER OF DAYS SPENT IN BED, BY METHOD

Method	Month 1	Month 2	Month 3	Three-month average
Personal:	1.52	1.71	1.52	1.58
Face-to-face	1.67	2.01	1.57	1.75
Phone	1.38	1.43	1.47	1.43
Diary:	3.41	2.69	2.48	2.86
Pick-up	3.70	3.41	2.31	3.14
Mail-in	2.99	1.80	2.74	2.51
Compensation	4.26	3.36	2.73	3.45
No compensation	2.47	1.95	2.20	2.21
Ratio diary/personal	2.24	1.57	1.63	1.81
Initial interview				1.81
Health Interview Survey[a]				2.04

[a] Source: U.S. National Center for Health Statistics (1977, p. 3, Table B). Days per person per year converted to days per household per month.

days reported in the diaries is substantially higher. If one compares reports in the first month for compensated diary households, their average is more than double the current U.S. estimate.

There is no reason to expect that controlling for sample type would change any of the observed method differences, and that is the case. As may be seen in Table 3.14, there are no interactions between method and sample. These results confirm the earlier results for days felt ill and days stayed home, where there were also no interactions between sample and method.

Treatment of Illness When Stayed Home

Tables 3.15 and 3.16, which present treatment when stayed home, show the same results that were seen in Tables 3.6 and 3.7, which presented treatment when felt ill but performed usual activities. For all illnesses combined and for every illness separately, diary households continue to report substantially more use of nonprescription medicines than do personal interview households.

The overstatement of prescription relative to nonprescription drugs is as high for the more serious illnesses that required persons to stay home or miss work as for the less serious illnesses. This tends to confirm the earlier speculation that responses are in the direction of the perceived social desirability of using prescription rather than nonprescription medicines.

Visits to Health Professionals

Number of Visits

Differences by method. Unlike illness, disability, and bed days, there are virtually no differences in the reported visits or contacts with

TABLE 3.14

NUMBER OF DAYS SPENT IN BED, BY SAMPLE TYPE AND METHOD

Method	Low education				High education			
	Month 1	Month 2	Month 3	Three-month average	Month 1	Month 2	Month 3	Three-month average
Personal	1.86	1.79	1.60	1.75	1.20	3.12	1.63	2.56
Diary	3.66	2.29	2.04	2.66	3.12	2.56	2.87	2.85
	Low health incidence							
Personal	1.59	1.05	.78	1.14	.92	.70	.55	.72
Diary	1.50	2.51	1.02	1.68	1.84	1.77	1.91	1.84
	High health incidence							
Personal	2.10	2.41	2.29	2.27	1.45	2.42	2.26	2.04
Diary	5.74	3.39	3.05	4.06	4.24	3.22	3.70	3.74

TABLE 3.15

TREATMENT WHEN STAYED HOME FROM WORK OR SCHOOL
OR UNABLE TO DO USUAL ACTIVITIES, BY METHOD

(Percent Using Each Treatment)

Treatment	Month 1		Month 2		Month 3		Three-month average	
	Personal	Diary	Personal	Diary	Personal	Diary	Personal	Diary
Prescription	50.2	27.4	47.2	29.2	45.4	29.5	47.8	28.5
Other medicine	26.1	46.8	34.7	55.5	31.2	41.1	30.4	47.8
Other treatment	20.7	7.2	12.1	6.6	18.8	8.8	17.4	7.5
None	14.1	20.8	12.6	12.9	14.2	23.2	13.7	19.1
Total[a]	111.1	102.2	106.6	104.2	109.6	102.6	109.3	102.9
N	(240)	(587)	(197)	(425)	(199)	(397)		

[a] Adds to more than 100 percent because of multiple treatments.

TABLE 3.16

USE OF PRESCRIPTIONS WHEN STAYED HOME OR UNABLE TO DO USUAL ACTIVITIES, BY TYPE OF ILLNESS AND METHOD

(Percent Using Prescriptions)

Type of illness	Month 1		Month 2		Month 3		Three-month average	
	Personal	Diary	Personal	Diary	Personal	Diary	Personal	Diary
Cold, sore throat	64.7	29.7	56.5	37.9	70.8	37.8	64.0	35.1
Flu	58.6	27.2	28.3	35.7	42.6	26.3	43.2	29.7
Headache and sinus	71.4	29.4	55.6	34.8	60.0	32.7	62.3	32.3
Pain	83.3	37.5	100.0	42.5	50.0	25.5	77.8	35.2
Indigestion	80.0	23.9	0	13.1	100.0	24.5	60.0	20.5
Backache	100.0	37.1	50.0	31.2	0	9.8	50.0	26.0
Arthritis	33.3	76.9	66.7	36.4	88.9	60.6	63.0	58.0
Injury	95.0	25.7	87.5	15.9	47.8	16.7	76.8	19.4
Other	82.2	43.6	90.7	44.6	74.6	39.1	82.5	42.4

health professionals by data-collection method. As may be seen in Table 3.17, diary households reported an average of 1.53 visits per month, compared to 1.6 reported in personal interviews. This is not a practical or statistically significant difference.

The only difference that even approaches significance is between diary households who were compensated and those who were not. Compensated households reported an average of 1.66 visits per month, which is about 18 percent higher than the 1.39 visits reported by noncompensated households. Although it would require a difference of .3 to be significant at the .05 level, these results are consistent with those for the earlier variables where compensated households reported more illness, disability, and bed days than did noncompensated households.

As before, differences between telephone and face-to-face averages are not significant. The differences between the diary pick-up and mail-in procedures are also not significant but show the same patterns seen earlier that reflect differential sample cooperation.

In the initial interview, the question on health professionals was asked for both the last two weeks and the past month. The mean number of visits were 2.25 and 2.11, respectively. As before, these unbounded results are significantly higher than the results of the bounded interviews and diary reports, but the 15-percent difference is smaller than observed earlier. This is because both telescoping and omitted visits are probably reduced as the event becomes more salient, and a visit to a health care provider is evidently more salient than an illness or even a bed day.

The annual estimate from the Health Interview Survey of 1.73 visits per household month is lower than the mean on the initial interview in this

TABLE 3.17

NUMBER OF VISITS TO HEALTH PROFESSIONALS, BY METHOD

Method	Month 1	Month 2	Month 3	Three-month average
Personal:				
Mean visits	1.81	1.59	1.40	1.60
σ	2.38	2.43	1.99	
Face-to-face	1.92	1.66	1.46	1.68
Telephone	1.70	1.52	1.33	1.52
Diary:				
Mean visits	1.71	1.43	1.45	1.53
σ	2.23	1.99	1.98	
Pick-up	1.66	1.33	1.32	1.44
Mail-in	1.77	1.57	1.64	1.66
Compensation	1.87	1.55	1.56	1.66
No compensation	1.54	1.30	1.33	1.39
Ratio diary/personal	.94	.90	1.04	.96
Initial interview				
Based on month				2.11
Based on 2 weeks				2.25
Health Interview Survey[a]				1.73

[a] Source: U.S. National Center for Health Statistics (1977, p. 4, Table C). Number per person per year converted to number per household per month.

study but quite close to the averages for both the personal and diary panels. This most likely results from the compensating effects of sample and response differences. Controlling for sample differences, one would estimate that the current HIS slightly overestimates visits to health care providers because of some telescoping.

There is a decline in the number of reported visits by diary households from the first to later months. The same decline is seen, however, for households who were interviewed in person. This leads to the conclusion that this was a real seasonal effect and not a fatigue effect as seen in diary households for illness, disability, and bed days.

Differences by sample and method. Given the absence of differences between diary and personal interviews for the mean number of health professional visits, one would not expect to find any interactions between sample and method, nor are any found. As before there are sample differences that reflect real differences in the use of health care providers by education and previous health incidence.

Type of Health Professional Visited

In the absence of any significant difference in the number of visits to health professionals, one would not expect any difference in the type of professional visited. The differences seen in Table 3.18 are generally small and not statistically significant. The only difference that might be related to response effects is in the percentage of visits to optometrists. Diary households were more likely to mention visits to optometrists than were personal interview households, although both the personal interview questionnaire and the diary form mentioned optometrists in giving examples of health professionals.

TABLE 3.18

TYPE OF HEALTH PROFESSIONAL VISITED, BY METHOD

(Percent)

Type	Month 1		Month 2		Month 3		Three-month average	
	Personal	Diary	Personal	Diary	Personal	Diary	Personal	Diary
General MD	37.8	28.7	33.6	28.9	26.2	29.0	32.5	28.9
Dentist	17.1	20.5	24.1	26.4	23.6	21.6	21.6	22.8
Internist	8.6	8.0	6.0	8.2	7.6	8.0	7.4	8.1
Optometrist/ opthomologist	4.9	8.5	5.6	5.2	3.7	9.0	4.7	7.6
Pediatrician	7.1	7.3	7.9	7.4	14.4	6.7	9.8	7.1
Obstetrician	4.6	4.9	5.4	4.1	3.7	3.3	4.6	4.1
Chiropractor/ osteopath	4.1	5.2	3.9	4.4	3.5	5.4	3.8	5.0
Technician	1.4	4.8	1.0	2.5	1.3	1.3	1.2	2.9
Other	14.4	12.1	12.5	12.9	16.0	15.7	14.4	13.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
N	(659)	(1069)	(569)	(849)	(542)	(816)		

While one can give ex post facto reasons for the differences in mentions of optometrists, even this difference is not statistically significant at the .05 level and should merely be taken as suggestive of a hypothesis to be tested in future research.

Reason for Visit to Health Professional

There are no significant differences in the reasons for visiting health professionals reported by diary and personal interview households. It had been expected that diary households might report more visits for checkups, since these might be forgotten on the personal interview. Comparing the three-month averages in Table 3.19, diary households do report a slightly higher percentage of visits for checkups (30 percent, compared to 28 percent for the personal interviews), but this is neither statistically significant nor of practical importance.

Overall, the differences between diary and personal methods for visits to health professionals are small for all the statistics measured, indicating that visits are much less subject to method effects than are illness, disability, or bed days.

Visits for Hospital Care

Visits for hospital care are even more salient than visits to health professionals. Thus, it is not surprising that the differences between the mean number of visits reported by method are small and not statistically significant. However, as shown in Table 3.20, diary households who were compensated consistently reported slightly higher numbers of visits than did noncompensated households. This continues the pattern observed for all previous medical events and suggests that even here compensation has some effect.

TABLE 3.19

REASONS FOR VISIT TO HEALTH PROFESSIONALS, BY METHOD

(Percent)

Reason	Month 1		Month 2		Month 3		Three-month average	
	Personal	Diary	Personal	Diary	Personal	Diary	Personal	Diary
Acute illness	55.1	46.5	51.5	51.2	47.2	53.2	51.3	50.3
Checkup	23.4	32.6	29.9	28.4	30.2	28.8	27.8	29.9
Chronic illness	12.8	11.2	10.7	11.2	13.0	11.6	12.2	11.3
Consultation	7.0	7.7	4.7	7.5	6.7	5.4	6.1	6.9
Therapy	.2	1.5	1.8	1.2	1.1	.6	1.0	1.1
Tooth cleaning	1.5	0.5	1.4	.5	1.8	.4	1.6	.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
N	(615)	(1075)	(569)	(851)	(540)	(821)		

TABLE 3.20

NUMBER OF VISITS FOR HOSPITAL CARE, BY METHOD

Method	Month 1	Month 2	Month 3	Three-month average
Personal:	.36	.25	.21	.27
Face-to-face	.38	.21	.18	.26
Telephone	.35	.32	.27	.31
Diary:	.30	.24	.27	.27
Pick-up	.35	.24	.27	.29
Mail-in	.23	.24	.27	.25
Compensation	.35	.30	.32	.32
No compensation	.24	.18	.20	.21
Ratio diary/personal	.83	.96	1.29	1.0
Initial interview[a]				.09

[a] Excludes outpatient care.

The large difference observed between the initial interview and the other results is due entirely to outpatient care. The initial interview did not specifically mention outpatient care, and as a result, most households did not report it. The diaries and continuing personal interviews asked specifically about both outpatient and overnight care. No comparison is given to the Health Interview Survey for all visits, since it specifically includes only overnight care.

If outpatient and overnight visits are separated, the results for overnight visits are comparable for all the procedures and agree with the HIS estimates, as seen in Table 3.21. None of the differences in the table is statistically significant.

Purchases of Medical Supplies

Number of Supplies Obtained

Diary households reported slightly more purchases of medical supplies than did households who were interviewed in person. As shown in Table 3.22, the differences are statistically significant in Months 2 and 3, but not in Month 1. It is also evident that the major differences are due to nonprescription supplies. This could be due to an underreporting of nonprescription supplies on the personal interview or to some confusion between prescription and nonprescription supplies on the personal interview, which was observed above in the discussion of the use of medicine for illnesses.

As has been observed consistently for all other medical events, diary households who were compensated reported slightly more purchases than did noncompensated diary households (see Table 3.23). There are no differences between diary pick-up and mail-in households. For the first time, however, there are major differences in reports from the telephone and face-to-face

TABLE 3.21

NUMBER OF VISITS FOR OUTPATIENT AND OVERNIGHT HOSPITAL CARE, BY METHOD

Type of care and method	Month 1	Month 2	Month 3	Three-month average
Outpatient:				
Diary	.26	.18	.20	.21
Personal	.29	.22	.17	.23
Overnight:				
Diary	.04	.06	.07	.06
Personal	.07	.03	.04	.05
Initial interview				.09
Health Interview Survey[a]				.04

[a] Source: U.S. National Center for Health Statistics (1977, p. 4, Table C). Number per person per year converted to number per household per month.

TABLE 3.22

NUMBER OF MEDICAL SUPPLIES OBTAINED, BY METHOD AND TYPE

Method and type	Month 1	Month 2	Month 3	Three-month average
Personal:				
Prescription	1.32	1.07	1.07	1.15
Nonprescription	.43	.40	.40	.41
Total	1.75	1.47	1.47	1.56
σ_T	2.33	1.88	2.06	
Diary:				
Prescription	1.12	1.13	1.15	1.13
Nonprescription	.67	.65	.60	.64
Total	1.79	1.78	1.75	1.77
σ_T	2.39	2.40	2.48	
Ratio diary/personal	1.02	1.21	1.19	1.13

TABLE 3.23

NUMBER OF MEDICAL SUPPLIES OBTAINED, BY METHOD

Method	Month 1	Month 2	Month 3	Three-month average
Personal:				
Face-to-face	2.18	1.79	1.76	1.91
Telephone	1.32	1.17	1.19	1.23
Diary:				
Pick-up	1.85	1.78	1.72	1.78
Mail-in	1.71	1.78	1.80	1.76
Compensation	1.94	1.88	1.80	1.87
No compensation	1.63	1.66	1.70	1.66

interviews. Households on the face-to-face interviews reported an average of 1.91 purchases of medical supplies, compared to an average of 1.23 on the phone. This difference is more than 50 percent and is significant at the .01 level.

Since the section on medical supply purchases was near the end of the interview, one cannot tell whether this difference is due to respondent fatigue or to the fact that respondents report medical purchases less completely than other medical events when asked on the telephone.

Table 3.24 shows the reports of prescription and nonprescription supplies both by telephone and face-to-face personal methods and compensated and noncompensated diary methods. It is evident that the small differences between the compensated and noncompensated diary households are found in both prescription and nonprescription supplies and that the percentage of use of prescription supplies does not differ between these methods. However, more of the differences between face-to-face and phone procedures are due to nonprescription supplies. Nonprescription supplies account for only 17 percent of medical supplies reported on the phone, but they account for about 30 percent of the medical supplies reported in face-to-face interviews.

There are no significant differences between reports on face-to-face interviews and diary reports of total number of medical supplies obtained. The three-month average of the total numbers reported by compensated diary households and households who were interviewed face-to-face are almost identical. Note, however, the same pattern observed earlier in the reporting of the use of medicines when ill: Diary households reported a lower percentage of prescriptions than did personal interview households. The differences

TABLE 3.24

NUMBER OF MEDICAL SUPPLIES OBTAINED, BY TYPE AND SPECIFIC METHOD

Type	Month 1		Month 2		Month 3		Three-month average	
	Personal							
	Face-to-face	Telephone	Face-to-face	Telephone	Face-to-face	Telephone	Face-to-face	Telephone
Prescription	1.50	1.14	1.23	.91	1.19	.99	1.31	1.01
Nonprescription	.65	.17	.55	.24	.53	.18	.58	.20
Total	2.15	1.31	1.78	1.15	1.72	1.17	1.89	1.21
Percent prescription	69.9%	86.3%	69.3%	78.9%	69.3%	84.3%	69.5%	83.2%
N	(201)	(205)	(192)	(201)	(190)	(202)		
	Diary							
	Compensation	No comp.	Compensation	No comp.	Compensation	No comp.	Compensation	No comp.
Prescription	1.01	1.04	1.19	1.06	1.31	1.18	1.17	1.09
Nonprescription	.61	.43	.68	.59	.77	.68	.69	.57
Total	1.62	1.47	1.87	1.65	2.08	1.86	1.86	1.66
Percent prescription	62.2%	70.8%	63.8%	64.1%	63.1%	63.6%	62.9%	65.7%
N	(334)	(307)	(318)	(285)	(305)	(267)		

are smaller than those observed earlier and are not significant, but they are in the same direction.

Type of Medical Supplies Obtained

Although there is evidently some confusion in the personal interviews about whether a medical supply used is a prescription drug or not, there is good agreement on what types of medical supplies were used. Table 3.25 compares type of medical supplies purchased by data-collection method. For almost all categories, the percentage differences are less than 1 percent. Perhaps the only difference worth mentioning is in reporting purchases of hormones and contraceptives. Although the difference is not statistically significant, diary households reported more purchases of these than did personal interview households. This may be the result of listing birth control pills among the examples of medical supplies or may indicate a greater willingness to record the purchase of a sensitive item in a diary than to report it directly to an interviewer. These alternative explanations need to be tested in additional experiments.

Other Purchase Details for Medical Supplies

Two other details of medical supply purchases can be compared by method: whether the purchase was covered by insurance and the average price of the item. The data in Table 3.26 indicate no significant differences on these two variables between diary and personal interview households. Nevertheless, some of the findings merit discussion. Households who were personally interviewed reported about 4 percent more purchases covered by insurance. Although this difference does not reach significance at the .05 level, it is consistent with the higher percentage of prescriptions reported in personal interviews.

TABLE 3.25

TYPE OF MEDICAL SUPPLIES PURCHASED, BY METHOD

(Percent of Total Purchases)

Type	Month 1		Month 2		Month 3		Three-month average	
	Personal	Diary	Personal	Diary	Personal	Diary	Personal	Diary
Analgesics	16.1	16.4	16.8	16.4	15.9	15.5	16.3	16.1
Antihypertensives	6.7	5.3	6.6	7.7	6.8	6.9	6.7	6.6
Sedatives	6.9	5.9	8.6	5.8	8.6	6.8	8.0	6.2
Gastrointestinal agents	6.9	6.1	6.6	6.3	5.5	6.8	6.3	6.4
Penicillins	9.8	6.4	6.6	6.2	5.7	6.6	7.4	6.4
Cardiovascular agents	5.5	5.8	4.3	5.4	5.5	6.2	5.1	5.8
Cold and allergy remedies	10.4	6.9	6.9	9.0	8.9	5.7	8.7	7.2
Other antimicrobial agents	3.9	4.1	6.3	3.4	4.7	4.5	5.0	4.0
Vitamins, etc.	3.7	5.3	4.8	4.4	5.5	4.1	4.7	4.6
Hormones, contraceptives	2.9	4.9	3.3	5.1	2.3	3.7	2.8	4.6
Eye glasses	3.9	4.1	3.3	2.6	4.4	2.5	3.9	3.1
Other prescriptions	5.1	4.8	4.5	4.3	6.0	4.3	5.2	4.4
Nonprescriptions								
Internal	15.1	18.3	17.8	17.8	16.0	19.2	16.3	18.4
External	3.1	5.7	3.6	5.6	4.2	7.2	3.6	6.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
N	(490)	(952)	(394)	(882)	(383)	(807)		
Number of entries insufficient to code	217	195	183	188	190	196		
Percent insufficient	30.7	17.0	31.8	17.6	33.2	19.5	31.9	18.0

TABLE 3.26

DETAILS OF MEDICAL SUPPLIES PURCHASED, BY METHOD

Insurance and price	Month 1		Month 2		Month 3		Three-month average	
	Personal	Diary	Personal	Diary	Personal	Diary	Personal	Diary
Insurance coverage (percent):								
Full or partial	23.8	19.5	23.4	22.2	25.1	19.3	24.1	20.3
Not covered	76.2	80.5	76.6	77.8	74.9	80.7	75.9	79.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
N	(671)	(1,013)	(556)	(972)	(534)	(921)		
Don't know								
Number of cases	36	122	22	100	40	82		
Percent	5.1	10.7	3.8	9.3	7.0	8.2	5.3	9.4
Average price	$7.42	$7.58	$6.54	$7.02	$7.98	$5.82	$7.31	$6.81

One noticeable difference is in the percentage of responses where the respondent did not know if the purchase was covered by insurance. The averages here are 9 percent for diary households and only 5 percent on the personal interviews. This does not mean that the personal interviews are more accurate. On the contrary, it suggests that more respondents on the personal interview guessed, whereas in the diaries more respondents said that they did not know. This difference in response may be an artifact of the forms. The diary contained a "don't know" column that could be seen and checked by the respondent. On the personal interview, the "don't know" was not mentioned, although there was space on the questionnaire for the interviewer to code this response. The difference may also indicate that respondents on personal interviews are less willing to admit that they don't know than are diary respondents.

There is no meaningful difference in the average price paid for medical supplies. In two of the three months, the average price is slightly higher in diaries than in the personal interviews, but this pattern is reversed in the final month. Given the high variability in average price, the results indicate good reliability across method on the price paid for medical supplies.

Payments to Health Care Providers

The final items of information sought in both the diaries and personal interviews were payments to health care providers (both professionals and organizations). Table 3.27 gives the comparisons by data-collection method for number of payments, average amount paid, and whether the payment was covered by insurance. There are no significant differences in the number of payments reported or in the average amount of payment. On both the

TABLE 3.27

PAYMENTS TO HEALTH CARE PROVIDERS, BY METHOD

Payment and insurance	Month 1		Month 2		Month 3		Three-month average	
	Personal	Diary	Personal	Diary	Personal	Diary	Personal	Diary
Number of payments:								
To professionals	.85	.90	.75	.77	.76	.81	.79	.83
To organizations	.19	.14	.12	.14	.11	.15	.14	.14
Total	1.04	1.04	.87	.91	.87	.96	.93	.97
Average amount	$35.31	$33.28	$35.43	$36.15	$39.21	$50.07	$36.65	$39.83
Insurance coverage (percent):								
Full or partial	26.8	31.0	28.9	30.9	19.1	29.9	24.9	30.6
Not covered	73.2	69.0	71.1	69.1	80.9	70.1	75.1	69.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
N	(395)	(612)	(311)	(482)	(309)	(481)		
Don't know								
Number of cases	29	57	29	65	30	70		
Percent	6.8	8.5	8.5	11.9	8.8	12.7	8.0	11.0

diaries and personal interviews, there is an average of slightly less than one payment per month. Although the average size of payment is slightly higher in the diaries, the variability in amount paid makes the difference meaningless. For both methods, the average payment is between $37 and $40.

As seen above, the greatest differences are in the reports of whether or not the item was covered by insurance. Diary households continue to report a slightly higher percentage of "don't know" responses, as they did on purchases of medical supplies. Again this may be due to the forms as well as the method, since a "don't know" column was available to the diary respondents. This could also indicate a greater willingness to admit ignorance in the diary.

Diary households reported that 30.6 percent of their payments were covered by insurance, compared to 24.9 percent on the personal interviews. This difference is seen in all three months and is statistically significant. The meaning and reason for this difference are not clear, particularly since it is opposite in direction from the effects observed on insurance coverage of medical supply purchases. Although it might reflect the diary household's greater ability to check records, this result should be treated cautiously until confirmed by additional research.

Reporting of Medical Events for Individual Household Members

Earlier work has indicated that respondents to personal interviews are more accurate when reporting about themselves than when reporting about other household members (Sudman and Bradburn, 1974). One would expect this difference to be greatest for the least serious events such as being ill but performing usual activities. Illnesses that require a household member to stay home or to go to the hospital should show less difference between the accuracy of reporting for the respondent and for others in the household.

Diary procedures should reduce these differences between the respondent and other household members, since recall errors are greatly reduced or eliminated. There still might be some differences with diary procedures if the person keeping the diary is unaware that certain events have occurred to other household members.

Tables 3.28-3.31 give the comparisons of the average number of reported events by type of household member for the different data-collection methods. There is a difference in the way in which the household members were classified by the two procedures, which makes the types not exactly comparable. In the diaries, household members were classified as head, spouse, children, or other adult members. In the personal interview, household members were classified as adults or children and by sex. Thus, children were classified identically in both procedures, but adults were not.

Since the diary was kept by the wife in almost all households where both a husband and wife were present, the comparison is made between female adults on the personal interview and wife on the diary. Note that female adults need not be wives, although the great majority were. Male adults in the personal interview are compared to the head and other adults in the diary. Even with this methodological artifact, the results are consistent over different medical events and agree with the earlier research.

In every case, the ratio between the diary and personal interview on number of reported events is smallest for the wives (female adults), who were generally the diary keepers or respondents. The ratios are largest for the household heads and other adults; the ratios for the children are in-between. As one would expect from earlier research, this is mainly due to differences in the levels of reporting on the personal interviews. The

TABLE 3.28

NUMBER OF DAYS FELT ILL BUT PERFORMED USUAL ACTIVITIES, BY TYPE OF HOUSEHOLD MEMBER AND METHOD

Type of household member and method	Month 1	Month 2	Month 3	Three-month average
Children:				
Personal	.57 (467)[a]	.28 (452)	.51 (455)	.45
Diary	1.40 (772)	.98 (739)	1.01 (702)	1.13
Ratio diary/personal	2.46	3.49	1.99	2.51
Male adults (head and other adults):				
Personal	1.12 (372)	.98 (362)	1.27 (360)	1.12
Diary	3.50 (763)	2.36 (719)	2.62 (683)	2.83
Ratio diary/personal	3.13	2.41	2.06	2.52
Female adults (wife):				
Personal	1.78 (447)	2.07 (438)	1.90 (440)	1.92
Diary	2.40 (469)	2.06 (441)	1.57 (420)	2.01
Ratio diary/personal	1.35	1.00	.83	1.05

[a] The case base for each cell is given in parentheses.

TABLE 3.29

NUMBER OF DAYS STAYED HOME FROM WORK OR SCHOOL OR UNABLE TO DO USUAL ACTIVITIES, BY TYPE OF HOUSEHOLD MEMBER AND METHOD

Type of household member and method	Month 1	Month 2	Month 3	Three-month average
Children:				
Personal	.70	.76	.74	.73
Diary	.91	.64	.86	.80
Ratio diary/personal	1.30	.84	1.16	1.10
Male adults (head and other adults):				
Personal	.74	1.19	.96	.96
Diary	1.64	1.49	1.27	1.47
Ratio diary/personal	2.21	1.25	1.32	1.53
Female adults (wife):				
Personal	1.50	1.49	1.39	1.46
Diary	1.68	1.12	.94	1.25
Ratio diary/personal	1.12	.75	.68	.85
Health Interview Survey:[a]				
Children				.92
Male adults				1.44
Female adults				1.96

[a] Source: U.S. National Center for Health Statistics (1977, p. 26, Table 16). Days per year converted to days per month.

TABLE 3.30

NUMBER OF DAYS SPENT IN BED, BY TYPE OF HOUSEHOLD MEMBER AND METHOD

Type of household member and method	Month 1	Month 2	Month 3	Three-month average
Children:				
Personal	.35	.34	.44	.38
Diary	.75	.56	.74	.68
Ratio diary/personal	2.15	1.65	1.68	1.79
Male adults (head and other adults):				
Personal	.31	.51	.26	.36
Diary	1.19	1.18	.78	1.05
Ratio diary/personal	3.84	2.31	3.00	2.92
Female adults (wife):				
Personal	.74	.72	.66	.71
Diary	1.24	.68	.70	.87
Ratio diary/personal	1.68	.94	1.06	1.23
Health Interview Survey:[a]				
Children				.35
Male adults				.27
Female adults				.41

[a] Source: U.S. National Center for Health Statistics (1977, p. 26, Table 16). Days per year converted to days per month.

TABLE 3.31

NUMBER OF VISITS TO HEALTH PROFESSIONALS, BY TYPE OF HOUSEHOLD MEMBER AND METHOD

Type of household member and method	Month 1	Month 2	Month 3	Three-month average
Children:				
Personal	.45	.45	.39	.43
Diary	.33	.32	.33	.33
Ratio diary/personal	.73	.71	.85	.77
Male adults (head and other adults):				
Personal	.37	.33	.31	.34
Diary	.73	.49	.56	.59
Ratio diary/personal	1.97	1.48	1.81	1.75
Female adults (wife):				
Personal	.73	.57	.59	.63
Diary	.59	.50	.49	.53
Ratio diary/personal	.81	.88	.83	.84
Health Interview Survey:[a]				
Children				.35
Male adults				.34
Female adults				.54

[a] Source: U.S. National Center for Health Statistics (1977, pp. 25 and 29, Tables 18 and 20). Number per person per year converted to number per household per month.

diary reports flatten the differences between household members, although some differences still remain.

Also as expected, the sharpest difference is seen in Table 3.28 for the least important event, days felt ill but performed usual activities. The ratio of the diary days to the personal interview days is 1.05 for female adults (wife). For both male adults and children, the ratio of diary to personal is 2.5. It is evident that there is substantial underreporting of days felt ill but performed usual activities for members other than the respondent on the personal interview.

The differences between personal interviews and diaries by household member are considerably narrowed for days stayed home from work or school or unable to do usual activities, but they are still in the same direction. As seen in Table 3.29, the ratio of diary to personal interview days is .85 for female adults (wife), 1.10 for children, and 1.53 for male adults.

The same pattern is seen in Table 3.30 for bed days. The ratio of diary to personal bed days is 1.23 for female adults (wife), 1.79 for children, and 2.92 for male adults. The only slight variation in this pattern is seen in reported visits to health professionals (Table 3.31). Here the ratio of diary to personal visits is slightly lower for children (.77) than for female adults (.84), but the ratio for male adults is still the highest (1.75).

For comparison, estimates are available from the Health Interview Survey for days stayed home, bed days, and visits to health professionals by male and female adults and children. In the HIS, most household informants are female adults. These data show the same patterns as the personal interviews, again confirming that the sample for the present study is reasonably reflective of a national sample. If one extrapolates the results of this study to the Health Interview Survey, it would appear that the HIS currently underestimates medical events for children and especially for male adults.

Regression Analyses of Reported Levels of Medical Events

To conclude this chapter, Tables 3.32 and 3.33 present the results of regression analyses where the dependent variables are, as before, the number of medical events reported and the independent variables are household and individual household member characteristics plus the experimental treatments.

The experimental procedures are treated as dummy variables. For personal interviews, face-to-face methods are assigned a value of 1 and telephone methods a value of 0. For diary procedures, mail-in methods are assigned a value of 1 and pick-up procedures a value of 0; also, compensated households are assigned a value of 1 and noncompensated households a value of 0.

The other variables are continuous. Previous health incidence is the total number of household health events reported on the screener questionnaire; education of female head or spouse of head is measured in the number of years of school completed; household size is the total number of members in the household.

It would have been possible to treat personal vs. diary procedures as one additional dummy variable in the regression, but it seemed more informative to run separate regressions since the experimental treatments differed. Compensation was an experimental treatment only for diary households, whereas the telephone vs. face-to-face comparisons are found only in the personal interviews.

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TABLE 3.32

UNSTANDARDIZED REGRESSION COEFFICIENTS FOR MEDICAL EVENTS, FOR HOUSEHOLDS

Variable	Month 1		Month 2		Month 3		Three-month average
	β	F ratio	β	F ratio	β	F ratio	β
	Felt ill but performed usual activities						
Personal:							
Constant	3.25		10.30		4.81		6.45
Previous health incidence	1.92	5.05	1.89	5.18	2.89	9.34	2.23*
Education	-.20	2.18	-.45	11.93	-.19	1.59	-.28*
Method	1.20	2.19	-.94	1.41	-.54	.37	-.09
Household size	-.08	.10	-.38	2.66	-.22	.69	-.23
Multiple R	.15		.22		.17		.18
Adjusted R^2	.01		.04		.02		.02
Diary:							
Constant	4.94		3.49		1.57		3.33
Previous health incidence	1.84	4.38	1.21	2.76	-.23	.05	.94*
Compensation	2.07	5.64	.49	.45	2.34	9.14	1.63*
Household size	.29	1.20	.15	.51	.21	.80	.22
Method	-.88	.99	-.20	.08	.61	.60	-.16
Education	0	--	0	--	.25	2.13	.08
Multiple R	.14		.08		.16		.13
Adjusted R^2	.01		0		.02		.01
	Stayed home or unable to do usual activities						
Personal:							
Constant	4.25		3.75		3.22		3.74
Previous health incidence	1.50	4.27	2.57	8.97	2.03	6.31	2.03*
Education	-.28	6.28	-.21	2.23	-.11	.68	-.20*
Method	.34	.24	.46	.29	-.34	.20	.15
Household size	.28	1.86	0	--	.20	.74	.16
Multiple R	.18		.17		.16		.16
Adjusted R^2	.02		.02		.02		.02
Diary:							
Constant	3.15		2.63		.51		2.10
Previous health incidence	-1.11	5.06	-.54	.32	-.10	.04	-.58
Compensation	1.58	4.78	1.65	5.32	.41	.62	1.21*
Household size	.65	8.77	.42	3.79	.82	28.33	.63*
Method	-.73	1.00	-.71	.96	-.16	.10	-.53
Education	0	--	.02	.02	0	--	.01
Multiple R	.16		.13			.22	.17
Adjusted R^2	.02		.01			.04	.02

(Table 3.32 continued)

TABLE 3.32--Continued

Variable	Month 1		Month 2		Month 3		Three-month average
	β	F ratio	β	F ratio	β	F ratio	β
	Bed days						
Personal:							
Constant	2.10		.96		.26		1.11
Previous health incidence	.38	.85	1.19	5.26	1.17	5.79	.91*
Education	-.15	5.46	-.06	.61	-.04	.33	-.08
Method	.25	.42	.30	.36	0	--	.18
Household size	.18	2.37	.07	.23	.32	5.52	.19*
Multiple R	.15		.14		.20		.16
Adjusted R^2	.01		.01		.03		.02
Diary:							
Constant	2.40		1.33		-1.44		.76
Previous health incidence	-.70	1.17	-.21	.08	0	--	-.30
Compensation	1.53	5.65	1.07	3.49	.45	1.27	1.02*
Household size	.58	8.80	.29	2.84	.76	41.20	.54
Method	-.69	1.13	-1.18	4.15	.33	.68	-.51
Education	0	--	.10	.59	.10	2.57	.08
Multiple R	.16		.14		.29		.20
Adjusted R^2	.02		.01		.07		.03
	Visits to health professionals						
Personal:							
Constant	-.21		-.73		-.84		-.59
Previous health incidence	.66	10.14	.70	11.24	.83	17.25	.73*
Education	.02	.30	.06	3.47	.07	5.56	.05*
Method	.37	3.56	.34	2.92	.17	.84	.29
Household size	.24	17.25	.18	9.89	.21	13.66	.21*
Multiple R	.32		.31		.36		.33
Adjusted R^2	.09		.08		.12		.10
Diary:							
Constant	-.44		-.60		-.21		-.42
Previous health incidence	-.25	1.23	-.15	.48	.18	.70	-.07
Compensation	.32	3.64	.25	2.55	.20	1.68	.26*
Household size	.25	23.73	.21	4.57	.29	37.49	.25*
Method	.14	.71	.26	1.66	.32	4.04	.24
Education	.14	13.96	.13	13.06	.07	7.75	.11*
Multiple R	.28		.28		.30		.29
Adjusted R^2	.07		.07		.09		.08

*Consistently significant at the .05 level over the three-month period.

TABLE 3.33

UNSTANDARDIZED REGRESSION COEFFICIENTS FOR MEDICAL EVENTS, BY TYPE OF HOUSEHOLD MEMBER

(Three-Month Averages)

Variable	Adults		Children
	Male	Female	
	Felt ill but performed usual activities		
Personal:			
Constant	1.39	3.48	-.05
Previous health incidence	.53*	.88*	.16
Education	-.10	-.23	0
Method	-.37	.02	.29*
Number of members	.60*	.75*	.29*
Multiple R	.16	.18	.20
Adjusted R^2	.02	.03	.03
Diary:			
Constant	3.86	.66	-.53
Previous health incidence	.03	.44	.35
Compensation	1.04*	.19	.38*
Number of members	.49	.81*	.29*
Method	-.34	.07	.18
Education	-.14	-.02	.10
Multiple R	.09	.13	.20
Adjusted R^2	.01	.01	.03
	Stayed home or unable to do usual activities		
Personal:			
Constant	.80	2.19	.41
Previous health incidence	.45	.62	.45
Education	-.05	-.22	.02
Method	.13	.15	.19
Number of members	.44	1.30*	.58*
Multiple R	.10	.18	.35
Adjusted R^2	0	.03	.12
Diary:			
Constant	1.96	1.33	-.09
Previous health incidence	-.50	-.06	-.01
Compensation	.55	.29	.40*
Number of members	.27	.46*	.36*
Method	-.51	-.04	-.08
Education	.03	-.06	.06
Multiple R	.09	.10	.23
Adjusted R^2	0	0	.05

(Table 3.33 continued)

TABLE 3.33--Continued

Variable	Adults		Children
	Male	Female	
	Bed days		
Personal:			
Constant	.15	.84	-.31
Previous health incidence	.25	.25	.22
Education	0	-.11	-.01
Method	-.13	.18	.16
Number of members	.12	.87*	.34*
Multiple R	.09	.18	.33
Adjusted R^2	0	.03	.10
Diary:			
Constant	1.05	.74	-.08
Previous health incidence	.39	.07	.04
Compensation	.36	.32	.37*
Number of members	.03	.24*	.29*
Method	-.42	-.10	-.07
Education	.05	-.02	.06
Multiple R	.09	.10	.21
Adjusted R^2	0	0	.04
	Visits to health professionals		
Personal:			
Constant	-.17	-.04	.29
Previous health incidence	.09	.29*	.23*
Education	.04	.01	.02
Method	.15*	.11	.05
Number of members	.25*	.38*	.31*
Multiple R	.24	.23	.43
Adjusted R^2	.05	.04	.18
Diary:			
Constant	.14	-.09	.21
Previous health incidence	-.10	-.04	.07
Compensation	.09	.04	.13
Number of members	.09	.31*	.15*
Method	.06	.09	.06
Education	.05	.02	.04
Multiple R	.12	.19	.30
Adjusted R^2	.01	.03	.08

*Consistently significant at the .05 level over the three-month period.

The tables show unstandardized coefficients for both personal interview and diary households for each type of medical event. Data for each month are given for total household reports in Table 3.32. The separate regression results for male adults, female adults, and children are shown in Table 3.33, where the data have been summarized over all three months to increase stability and to make the table easier to follow.

The major effect of the regression analyses is to confirm the results of earlier tables. No new variables, except for household size, are significant in the regression analyses. As would be expected, the number of medical events is related to household size. Other demographic variables such as income and race have no significant additional effects after controlling for education and previous health incidence, the variables used in the sample design.

The ability to look at the results over three months and by four different types of medical events makes it possible to separate the variables that consistently affect reported levels of events from those that show up as significant on a single run owing to chance when many regressions are performed.

Thus, in Table 3.32, reports of all types of medical events are significantly influenced by previous health incidence on the personal interviews. For the diary households, however, previous incidence is significant only for the first of the medical events--felt ill but performed usual activities. The reason for this difference is fairly evident. Previous incidence was determined by the earlier telephone screening, so that it is not surprising that personal interviews sharing the same method effects are more highly related. The lack of meaningful effects in the diary indicates the measurement error in the measure of previous incidence rather than the absence of any real effects.

A difference that has already been pointed out earlier is seen sharply in Table 3.32, the effects of education. For diary households, education has virtually zero effect on reported levels of illness events. Only on visits to health professionals is the effect of education significant, and this is probably a substantive rather than a methodological finding. That is, more highly educated households (who have higher incomes) can afford to and do visit health professionals more often. Exactly this same pattern is seen in reports on the personal interviews of visits to professionals.

However, on the personal interviews, education has a consistently negative effect on the reporting of medical events, and the results are significant except for number of reported bed days in Months 2 and 3. Since the same relationship is not observed on the diaries and since there is no theoretical reason to expect it, this appears to be a methodological artifact. One could explain this in either of two ways: less-educated respondents overreport illnesses or more-educated respondents underreport them. The past literature (Sudman and Bradburn, 1974) would suggest that less-educated respondents are more likely to make memory errors, but nothing in our data can be used to confirm this notion. Nevertheless, this finding clearly has implications for the measurement of illness by social class using personal methods.

As would be expected, household size has a significant positive effect for both personal interview and diary households in reported levels of days stayed home, bed days, and visits to health professionals. For some unexplained reason, there is no significant effect for days felt ill but performed usual tasks for either the diary or personal interview households. In the absence of any other data, this seems merely to be due to sampling variability.

Table 3.32 confirms the earlier finding that, overall, whether the telephone or face-to-face procedure was used on personal interviews or whether the diary was picked up or mailed in has no significant effect on reported levels of events. The regression results, however, also confirm the earlier strong finding that compensation increases the reporting level on all events for diary households.

A slightly more complex result, however, is seen in Table 3.33, where the data are separated by individual household member. The results for diary households are just as before, but there is some indication of method effects for the personal interview households. That is, conducting the interview face-to-face or on the telephone seems to have had an effect on the level of events reported for household members other than the respondent.

For children and adult women, reported levels of events are slightly higher for face-to-face than for telephone interviews. The regression coefficient is significant only for days felt ill but performed usual activities but is in the same direction for other medical events. For male adults, the results are generally in the opposite direction. The actual number of events reported by method and type of household member for both personal interview methods is given in Table 3.34. The same mixed results are observed as in the regression analyses. This may be just statistical variability, but the results do suggest the usefulness of exploring this issue in some additional studies that compare face-to-face and telephone surveys of medical events.

TABLE 3.34

NUMBER OF MEDICAL EVENTS, BY TYPE OF EVENT, TYPE OF HOUSEHOLD MEMBER, AND PERSONAL INTERVIEW METHOD

Type of household member	Month 1		Month 2		Month 3		Three-month average	
	Face-to face	Telephone	Face-to-face	Telephone	Face-to-face	Telephone	Face-to-face	Telephone
	Felt ill but performed usual activities							
Children	.57	.57	.43	.13	.73	.29	.58	.33
Male adults	1.25	.99	.82	1.14	.74	1.80	.94	1.31
Female adults	2.27	1.29	1.69	2.45	1.87	1.93	1.94	1.89
	Stayed home or unable to do usual activities							
Children	.76	.64	.87	.65	.75	.73	.79	.67
Male adults	.80	.68	1.15	1.23	.66	1.26	.87	1.06
Female adults	1.55	1.45	1.66	1.32	1.47	1.31	1.56	1.36
	Bed days							
Children	.40	.30	.45	.24	.46	.42	.44	.32
Male adults	.29	.33	.37	.65	.17	.35	.28	.44
Female adults	.82	.66	1.13	.75	1.11	1.01	1.02	.81

Role of the Interviewer in Improving Diary Reports

It was anticipated that not all diary entries (a single line reporting one health episode) would be complete when the interviewer came to pick up the diary and that some additional information would be collected by the interviewer during the pick-up visit. Interviewers were instructed to check those items that they, rather than the household diary keeper, had filled in. In a few cases the interviewer recorded events that had been completely omitted until the pick-up interview, but in most cases only one missing detail was added.

Table 3.35 gives the percentage of diary entries for which interviewers obtained additional information. There are several different reasons for tabulating these results. One can look at the overall rates as a measure of respondent difficulty with the task, possible carelessness, or lack of motivation. If incomplete data are caused by the difficulty of the task, the diary might need to be simplified or the training improved. If the causes are lack of motivation, additional compensation or other motivating procedures may be needed.

As might be expected, the percentage of all entries where interviewers obtained additional information declined from 15 percent in the first to 12 percent in the third month as household diary keepers became more experienced.

The percentage based on all entries is somewhat misleading, since most of the additional information was obtained on pick-up diaries and in only a few cases was additional information obtained on diaries that were mailed in. If one looks only at the diaries that were picked up, the percentage of entries where interviewers obtained additional information was 26 percent in Month 1, 20 percent in Month 2, and 21 percent in Month 3. It is evident

TABLE 3.35

DIARY ENTRIES FOR MEDICAL EVENTS FOR WHICH INTERVIEWERS OBTAINED ADDITIONAL INFORMATION, BY COMPENSATION, SAMPLE TYPE, AND MONTH

(Percent)

Type of medical event	Diaries		Compensation		Sample type			
					Low education		High education	
	All	Pick-up	Yes	No	Low health incidence	High health incidence	Low health incidence	High health incidence
	Month 1							
Felt ill but performed usual activities	14.3	27.7	12.8	16.3	18.3	22.7	15.8	6.8
Stayed home or unable to do usual activities	11.6	21.3	13.6	10.8	11.1	20.1	5.7	7.5
Visited health professional	13.7	23.4	9.0	19.9	22.1	18.9	8.2	9.3
Visited hospital	34.6	51.2	35.0	33.8	31.6	50.0	35.7	18.6
Obtained medical supplies	15.6	26.9	14.7	16.8	21.5	21.7	11.4	7.6
Paid medical bills	13.8	24.0	10.3	18.6	18.2	21.1	7.3	9.4
All events	14.9	26.3	13.1	17.4	19.6	22.4	11.7	8.5
	Month 2							
Felt ill but performed usual activities	12.6	21.6	12.8	12.4	18.3	14.6	9.3	10.9
Stayed home or unable to do usual activities	10.3	16.9	10.2	10.5	14.3	15.7	4.2	7.1
Visited health professional	10.4	18.8	11.1	9.5	22.4	13.7	5.1	7.3
Visited hospital	17.2	28.7	13.7	24.0	21.2	23.8	15.4	9.1
Obtained medical supplies	16.1	27.4	15.4	16.9	16.7	7.0	12.7	21.7
Paid medical bills	10.1	19.4	9.7	10.6	19.2	8.3	8.0	8.9
All events	12.7	20.4	12.4	13.0	21.9	14.6	5.1	9.6

(Table 3.35 continued)

TABLE 3.35--Continued

Type of medical event	Diaries		Compensation		Sample type			
					Low education		High education	
	All	Pick-up	Yes	No	Low health incidence	High health incidence	Low health incidence	High health incidence
	Month 3							
Felt ill but performed usual activities	10.7	19.3	9.7	12.5	11.0	15.6	7.6	9.0
Stayed home or unable to do usual activities	8.5	14.9	6.1	11.6	8.3	13.0	5.0	7.7
Visited health professional	10.4	18.6	6.9	15.0	13.2	19.8	6.8	5.6
Visited hospital	22.2	37.0	20.2	25.9	14.3	22.7	36.8	21.0
Obtained medical supplies	14.1	24.0	11.7	17.0	26.4	18.0	7.7	4.7
Paid medical bills	10.4	21.2	8.3	13.3	22.4	27.8	11.4	6.6
All events	11.7	21.1	9.5	14.9	18.3	16.4	8.5	7.1

that the interviewer check, when conducted, improved the completeness of data in better than one out of five entries.

One might ask whether households who were compensated were more careful in completing the details in addition to reporting a larger number of medical events. The results of Table 3.35 indicate that interviewers completed more entries when households were not compensated. The differences are generally small but in the expected direction. In Month 1, interviewers obtained additional information in 13 percent of the entries from compensated households and 17 percent of the entries from noncompensated households; in Month 2, the corresponding figures were 12 and 13 percent; in Month 3, the figures were 10 and 15 percent.

Households with less education were about twice as likely to omit some details that were then completed by an interviewer than were households with more education. Previous medical experience, however, had no direct relation. The slight decline from Month 1 to Month 3 in the number of entries where interviewers obtained additional information is observed equally among the low- and high-education samples.

Finally, there is little difference in the percentages of events by type of event, except for hospital visits. Consistently over all samples, treatments, and months, the percentage of hospital visit entries where interviewers obtained additional information is substantially greater than for the other events. Most of the additional information obtained by the interviewers concerned the beginning and ending dates of hospitalization. The general problem of the dates for medical events was discussed earlier in connection with the undetermined length of illnesses.

In summary, these results indicate the value of the interviewer check. Although in some cases missing information can be imputed from the details that are given, it is always better to obtain this information from the respondent, even if some recall errors are possible.

What do the data in Table 3.35 tell us about the difficulty of the diary-keeping task? These results remind us that diary keeping is subject to error, as are all clerical procedures. As one would expect, the task is more difficult for the lesser educated, but omitted details can be found among all sample types, events, and treatments. The great majority of all entries, however, were complete and required no additional interviewer effort. Even when an interviewer obtains additional information, recall is improved because the recorded details help the respondent to remember.

It is reasonable to assume that if the interviewer discovers some missing details on the pick-up interview, some household diary keepers will discover on their own that they have omitted some details if they check the diary a day or two before the interviewer arrives. Thus, some details are added by recall even before the interviewer arrives. What we have been calling diary procedures are really a combination of record keeping and making corrections by recall. It is this combined procedure, rather than a perfect record-keeping system, that this report describes.

Summary

1. For the less salient medical events, especially days felt ill but performed usual activities, substantially higher reporting of events is obtained from diaries than from personal interviews. For the more salient events, such as visits to health professionals and hospitals, the differences between diary and personal methods become insignificant. The greatest differences between personal and diary methods are observed in the first month of the panel. In subsequent months, the number of

health events reported in diaries is lower than in the first month; this drop is similar to that observed in diary studies of other types of behavior. Diary methods yield more accurate reporting than do personal methods for household members other than the respondent. On personal interviews, the data about the respondent are considerably more complete than the data about other household members.

2. Diary households who are compensated consistently report higher levels of events than do noncompensated households. There are no consistent differences in reported levels between diary pick-up and mail-in in procedures, except for those caused by sample biases.
3. There are no differences in total household events reported by telephone and face-to-face methods, although there is the possibility that accuracy of reporting about individual members of the household differs between telephone and face-to-face procedures.
4. The same method effects on reporting levels are generally seen for all sample types. There is no evidence that education has an effect on diary keeping. There is some indication, however, that households with less education may be subject to large response effects on the personal interview.
5. Diary households report slightly more purchases of medical supplies, but the number of payments to health care providers does not differ by data-collection method.
6. Reports on the details of a medical event or expenditure are consistently more accurate in the diaries. As an illustration, there is evidence that respondents on the personal interviews misclassify a substantial proportion of over-the-counter medical supplies as being

prescriptions. This may indicate a greater willingness by some respondents to report sensitive and less socially desirable behavior in diaries than in personal interviews. Some diary details, however, are obtained by recall when the diary is picked up by the interviewer.

7. Comparisons to data from the Health Interview Survey indicate that there is no difference in medical experiences between the sample of Illinois households used in this study and a national sample. Comparisons of the initial and unbounded interview to the panel results, however, indicate that some of the Health Interview Survey results may be too large because of telescoping, although the effects of telescoping and forgetting events may cancel each other.

4. COSTS OF ALTERNATIVE PROCEDURES AND OPERATIONAL ISSUES

The previous chapter indicated that for most medical events, the use of diaries or repeated recall interviews provides more accurate data than a single interview. The cost-effectiveness of these alternative procedures is discussed in this chapter. In addition, problems of control and data processing are discussed.

Cost Analysis

Procedures

Data are presented here for direct interviewer costs for the face-to-face, telephone, diary pick-up, and diary mail-in methods. Each interviewer kept records separately by each method of data collection, so that it was possible to separate costs by procedure. The data are not completely unambiguous, however. For example, on some trips an interviewer may have contacted or attempted to contact several households assigned to different methods. In this case, travel costs were allocated by weighting the figures according to the number of households in each data-collection method.

Records relating to telephone charges, mailing costs, and household compensation were maintained by SRL's accounting staff. Only the direct costs for data collection are included; training costs, clerical costs, and phone charges not related to interviewing specific households are omitted. Also, cost data for field supervisors, field coordinators, and other supervisory personnel working on the project are not included in the tables.

Results

The basic cost data are presented in Tables 4.1-4.3. Table 4.1 gives the total direct cost in dollars per interview by data-collection method. Table 4.2 summarizes the results over the three-month period. Table 4.3 gives dollar costs per interview for interviewing time, travel time, mileage expense, telephone charges, mailing costs, and respondent compensation by method.

The following items should be considered in these comparisons:

1. The decrease in costs between the initial face-to-face interview and later face-to-face interviews or diary collecting is probably due to the reduction of time spent in explaining the purpose and nature of the study, giving respondents feedback, probing, recruiting respondents for later interviews, and editing the questionnaires. Presumably, later face-to-face interviews required more time to complete, since they asked for more information; however, the time spent on other interviewing tasks decreased significantly for later interviews, causing the total interview costs to drop by about $2.00.
2. The increase in costs between the initial telephone interview and later telephone interviews is due to the increase in both interviewing time and telephone charges. This was anticipated, since the later interviews, being more detailed, were expected to require more time to complete.
3. For the diary mail-in methods, the cost of reminder telephone calls was double for those households who received no compensation. No other differences in costs could be measured, since the accounts for mailing costs were not kept by case. Of course, the major difference in costs

TABLE 4.1

TOTAL DIRECT COSTS PER INTERVIEW, BY METHOD

Method	Cost	N
Initial interview:		
Face-to-face	$15.50	978
Telephone	3.42	219
Single monthly panel interview:		
Face-to-face	12.77	589
Telephone	4.33	604
Diary pick-up		
Compensated	15.31	537
Not compensated	10.68	517
Diary mail-in		
Compensated	5.48	427
Not compensated	1.06	338

TABLE 4.2

TOTAL DIRECT INTERVIEWING COSTS OF ALTERNATIVE DATA-COLLECTION METHODS OVER THREE MONTHS

Method	Cost
Four independent initial interviews with different households:	
All face-to-face	$62.00
All telephone	13.68
One initial and three recall interviews with same household:	
All face-to-face	53.81
All telephone	16.41
One initial face-to-face interview and three picked-up diaries:	
Compensation ($15)	61.43
No compensation	47.54
One initial face-to-face interview and three mailed-in diaries:	
Compensation ($15)	31.94
No compensation	18.68

TABLE 4.3

DIRECT COSTS PER INTERVIEW, BY TYPE OF ACTIVITY AND METHOD

Activity	Initial interview		Single monthly panel interview					
					Diary			
					Pick-up		Mail-in	
	Tele-phone	Face to-face	Tele-phone	Face-to-face	Compen-sation	No compen-sation	Compen-sation	No compen-sation
Interviewing	$8.52	$2.97	$6.51	$3.58	$4.44	$4.50	$ .10	$ .20
Travel time	2.21	--	1.91	--	1.97	2.00	--	--
Mileage expenses	4.77	--	4.35	--	4.12	4.18	--	--
Telephone charges	--	.45	--	.75	--	--	.11	.23
Postage	--	--	--	--	--	--	.37	.37
Labor of mailing	--	--	--	--	--	--	.26	.26
Respondent compensation	--	--	--	--	4.78	--	4.64	--
Total	$15.50	$3.42	$12.77	$4.33	$15.31	$10.68	$5.48	$1.06

is due to respondent compensation, which results in substantially higher total interviewing costs.

4. Excluding the costs of respondent compensation, there are no appreciable differences in interviewing costs for the diary pick-up methods between compensated and noncompensated households.
5. The costs seen in this study cannot be extrapolated to different geographic areas, survey organizations, or time periods. Nevertheless, the same relationships should be expected in different circumstances.

As one might expect and as seen in Tables 4.1 and 4.3, the diary mail-in procedure without compensation is the least expensive, with direct costs of slightly more than $1.00. Unfortunately, as we have seen in Chapter 2, this procedure yields a very low cooperation rate relative to the other procedures. The next cheapest method is the telephone, where repeated interviews are $4.33, compared to $12.77 for face-to-face procedures. Cooperation by phone compares favorably with face-to-face methods, as seen in Chapter 2. Except for purchases of medical supplies and reports on other household members, there is little difference in the level of data reported by telephone and face-to-face methods. Thus, as a low-cost alternative to face-to-face interviewing, telephone procedures deserve careful consideration.

The costs of the diary pick-up procedures bracket the costs of face-to-face interviewing. Diary pick-up procedures without compensation are less expensive than face-to-face interviews, but adding compensation increases the costs to $15.31, the highest cost per case of all the methods tested. If one was looking only at cooperation, diary pick-up levels are the same as the telephone and face-to-face levels, as seen in Chapter 2. This would indicate that considering cost, diary pick-up without compensation is better than face-to-face interviewing but worse than telephone interviewing. If only cooperation and costs are considered, diary pick-ups with compensation are clearly inferior to all other methods except diary mail-in procedures.

Using the results of Chapter 3 on levels of reporting, it becomes difficult to rank the procedures. The relatively inexpensive telephone procedure provides less complete data than do the diary procedures and is marginally inferior to face-to-face interviews. The most expensive procedure, diary pick-up with compensation, appears to yield the most complete information. Thus, an ultimate ranking depends on the relative importance of cost and quality. Perhaps the only clear relation is between diary pick-up without compensation and face-to-face interviews. Here, the diary pick-up procedure is both less costly and more accurate than the face-to-face interview and is thus clearly preferable.

Table 4.3 presents detailed breakdowns of costs so that it would be possible to revise costs for planning purposes as salary levels or other conditions change. The interviewing and travel time costs are based on a rate of $3.50 per hour. The mileage expenses are based on payment of 15¢ per mile for use of the interviewer's car.

Telephone charges are based on the use of the University of Illinois' direct Tie Lines to the city of Chicago, for which there is no added charge, and WATS lines for the remainder of the state of Illinois. These charges would be substantially higher if new phone equipment were required or direct Tie Lines were unavailable. Nevertheless, the phone procedures would still be cheaper than the face-to-face methods, assuming that WATS line charges did not increase substantially.

A brief mention should be made of respondent compensation. The plan had been to pay respondents $15 for the three months. However, a few respondents refused to accept the payment, thus reducing the average cost.

In some cases it may be necessary to obtain data for a household during an entire three-month period, discarding data for households who cooperate for less than the full three months. Table 4.4 presents the average costs by method for households who cooperated on this study for the three months. Average costs increase for each method when considering costs only for households cooperating for the entire three-month period. The percentage of this increase varies by method, reflecting differential rates of cooperation.

TABLE 4.4

DIRECT INTERVIEWING COSTS FOR HOUSEHOLDS COOPERATING FOR ENTIRE THREE-MONTH PERIOD, BY METHOD

Method	Cost
Face-to-face	$59.39
Telephone	16.90
Diary pick-up	
Compensation	66.23
No compensation	52.46
Diary mail-in	
Compensation	37.52
No compensation	23.45

Operational Issues

As on all major Survey Research Laboratory studies, the staff responsible for data control and coding were asked for comments about problems that occurred and for suggestions for changes in procedures if the study was repeated. These comments are given below, since they could be useful to other health researchers in planning future studies.

Perhaps the most interesting comment from the coding group relates to the relative difficulty of coding personal interviews. Independent of the analysis in Chapter 3, the coders found it much easier to code details such as types of medication and illnesses from diaries than from personal interviews. This agrees with the results of Chapter 3 and of previous research on diary and recall procedures indicating that diaries provide not only more accurate levels but also more accurate details of events.

The most accurate reporting of details is found in the pick-up diaries, since in this case the interviewer could make an immediate check of the form to correct ambiguities or add missing information.

Control Problems and Suggestions

The study design called for an initial interview with each household; that household was then re-interviewed or returned a diary every 30 days for three months. In order to keep control of each case, a precoded, precolumned interviewer report form was used. This form consisted of four pages, with one page allotted for the initial interview and one for each of the three subsequent interviews or diaries. It was designed to be used by the interviewer as a contact record and by the data reduction staff as a disposition record. Before the forms were sent into the field for the initial interview, the I.D. number, sample type, and method for each case were entered on the form and punched onto an IBM diskette. One interviewer report form was used for each case, and this form circulated more or less constantly between the field and data reduction staff. With computerized control, interviewer report forms needed to be processed completely in two weeks and then mailed back to the interviewers in the field (allowing one and a half weeks mailing time during the Christmas holiday season). This left little time to edit and keypunch these forms, run the control program, correct any problems, and mail them back. There was a continuous flow of forms into the office with no breaks during which the control process could catch up. Weekly keypunching of the interviewer report forms was scheduled for Wednesdays, with the control program run every Thursday. Delays occurred frequently due to keypunchers being ill or the computer being down.

Another related control problem was that the subsequent interviews were scheduled to take place every 30 days after the initial interview, and thus the dates of these interviews occurred throughout the month depending on the date of the initial interview with each household. This meant that some Month 1 interviews were received at the same time as some Month 2 interviews. The work for each interview "month" had to be kept separate at all times, and separate diskettes were needed for each month.

For the mail-in diaries, the data reduction staff was supposed to mail the household a diary and a postage-paid envelope for Months 2 and 3, according to the date of the initial interview. Since the dates of the initial interviews varied, subsequent mailings had to go out constantly. All these mailings had to be controlled to ensure that the diary for the proper month was sent to each household, which proved to be very difficult. Although computerized control was helpful in keeping track of the total number of cases received weekly, a hand record still had to be kept in order to know specifically which households had returned diaries and which had not. Also, the final mailing of the Month 3 diaries used two different cover letters, depending on whether a household was to be compensated or not.

Finally, some households did not send the diaries in on time. In this case, the control form was pulled and sent to the field section for a reminder phone call. This phone call sometimes resulted in the respondent's stating that the diary had been lost or never received and asking SRL to send a new one, thus generating another mailing to control.

Despite the advantages of computerized control in keeping track of final dispositions, it was necessary to keep some sort of hand control. One suggestion for greatly simplifying this process for the personal and diary pick-up methods would be to use duplicate interviewer report forms that contained identical information and were color-coded to keep office copies apart from interviewer copies. After receiving an interviewer copy, the office copy could be pulled and information marked on it. The interviewer copy could then be sent back immediately to compensate for mail delays and to take the pressure off keypunching. Although the transferring of information would take some extra time, the ease of keeping track of office copies would more than compensate for the time needed. Also, the office copy would be available in case the interviewer copy was lost in the mail.

Coding Problems and Suggestions

The coding instructions for the panel questionnaires are given in Appendix A. For ease in coding the face-to-face and telephone questionnaires, the order of each household's members had to be kept the same as on the initial interview. On telephone interviews in particular, respondents tended to give names in a different order than what was given initially. This was actually a field problem, since interviewers were instructed to use the same order for household members that had been used on the initial interview. This order was recorded on the last page of the interviewer report form.

However, very often the telephone interviewers simply did not use this information. Thus, when coding later months, the coder had to check the initial interview to be sure each household member was in the proper place.

Also, the personal questionnaire was split into two parts. The first part contained household member information, which was constant; the second part contained information that varied depending on illnesses, doctor and hospital visits, etc. Each part of the questionnaire was coded separately, and a great deal of care had to be taken in attributing health events to specific household members.

The questionnaires asked for names of illnesses and medical supplies purchased. Usable lists for coding were obtained only after much searching and then proved to be incomplete. Although only a few illnesses needed to be added to the list, many newly developed drugs had to be classified.

One suggestion for improving coding would be to drop the personal form and use only the diary forms. Respondents seemed to give more complete and detailed information in the diaries, and these forms were much easier to code.

A system that worked well was to keep questionnaires or diaries for all months of a particular household together with the initial interview and to code all three months after the form for the last month was received. Thus, the coder had the initial interview, which indicated the order of household members, and all three months could be completed at the same time.

Cleaning Problems and Suggestions

The only problem in cleaning was in keeping the diskettes for each month of the interviewing and for each part of the personal questionnaires straight. It would have been helpful to have color-coded the IBM diskettes for Months 1, 2, and 3 using one color per month, since not all persons checked what was written on the diskette.

Summary

1. Looking only at costs and cooperation, the telephone procedure is the least expensive method that yields high cooperation.
2. Face-to-face interviews are more expensive than diary procedures except when compensation is used for diary pick-up households.
3. Diary mail-in procedures after an initial face-to-face interview are more expensive than telephone interviews but cheaper than all other methods.
4. Keeping control forms moving on schedule between the interviewer and the central office is a serious problem, especially when the mails are moving slowly such as during the Christmas holiday season. This could be solved by maintaining two copies of each control form.
5. The diaries that are picked up are the easiest to code, since they have the most complete and detailed information. This is due to interviewer editing conducted at the time of the monthly visit.

5. RECOMMENDATIONS

Comparing the results of Chapters 2, 3, and 4 simultaneously, no one procedure is both the most accurate and the cheapest. The cheapest method--repeated telephone interviews--results in cooperation rates as high as those in face-to-face interviews. The levels of reporting and the quality of the data, however, are clearly inferior to data obtained from diary procedures and marginally inferior to data from face-to-face interviews on selected topics. The differences are greatest, however, for the less important and salient items and for purchases of medical supplies. If the major purpose of a study were to monitor more serious illnesses, the losses in accuracy from using telephone procedures would not be very important, and these procedures would become quite attractive.

If the greatest possible accuracy was required in terms of both sample cooperation and reporting, the diary pick-up procedures would be optimum. These yield not only the highest reporting levels for all kinds of medical events and expenditures but also the most complete and accurate recording of details. If households are to use diaries, there is no reason to use them only as memory aids. Furthermore, the data from the diaries can be processed with little difficulty by a trained coding staff.

Compensation had no significant effect on cooperation in this study except for the diary mail-in method, where cooperation rates were unacceptably low even when households were compensated. In contrast, the level of reporting of those diary households who were compensated was higher. One might expect that compensation would become even more important if the length of the period was extended beyond three months. Governmental agencies that have implicit or explicit policies against giving monetary compensation to respondents might consider the possibility of alternative forms of compensation. Possibilities include attractive publications from the U.S. Government Printing Office or a small electronic calculator for use in keeping track of medical expenses.

Diary mail-in procedures resulted in substantially lower cooperation levels than did all the other methods, although the quality of the diaries returned by mail was not significantly lower than that of diaries picked up by interviewers.

All the panel procedures eliminate telescoping and are, in that respect, superior to a single interview. There is some indication, however, that the current two-week period used in the Health Interview Survey balances telescoping and omissions. The results are closer to those in the diaries than to those in the bounded monthly interviews. Bounded interviews that were unadjusted for omissions would produce lower levels than those seen currently.

Given the variety of cost and quality considerations, are there procedures that are only a little more costly than the cheapest procedures but for which the gains in accuracy more than compensate for the increased costs? Some combined procedures seem to be worth consideration. One method might combine diary mail-in and telephone procedures. Households would be recruited to mail in diaries, but those who refused to do so (or who promised to do so but did not) would be contacted and interviewed by telephone. The phone work and mailing could be handled from a central location after the initial face-to-face recruiting interview. The presence of the diary in the home and at least its partial use as a memory aid should improve the quality of the phone reporting, although phone responses would still not be as accurate as reports in diaries that were picked up. At the same time, the low cooperation on the mail-in diaries would be overcome by the use of telephone procedures.

This procedure could be tested either with or without compensation for the responding households. It is not clear that compensation would have any effect on the households contacted by phone, but compensation would improve the level of reporting of the households who mailed in diaries.

Even if diary pick-up procedures were used, telephone calls might be made to obtain missing data or correct errors in diaries or to contact households who were unavailable during the diary pick-up period.

One combined method that is currently used--an initial face-to-face interview followed by later telephone interviews--appears to have no major advantages in terms of cost, cooperation, or quality of data over straight telephone interviewing. For a very carefully selected sample, however, it might be necessary to have the households without telephones represented. (Although less than 10 percent of all U.S. households are without a telephone in their homes, the percentage is substantially higher in some parts of the country, particularly the rural South.) For these households, a diary pick-up procedure could be used, with phone interviews used for the rest of the sample.

It should be noted that the same optimum allocation formulas that are used in other stratified samples would also be appropriate here. That is, if combined methods with different costs are used, the optimum allocation of the sampling rate in a stratum is inversely proportional to the square root of the unit costs in the stratum.

Finally, it should be noted that all the panel methods yield better data at lower cost than do independent interviews. This is true even if one is interested primarily in levels of reported events since the increase in response accuracy in panels more than compensates for the increase in sampling variance. If one is particularly interested in measuring changes rather than levels, the advantages of panels are even greater because response and sampling errors are lower for panels than for independent interviews. There is little doubt that households are interested in health topics and are willing to cooperate in surveys that gather health information on a continuing basis, regardless of whether diary or personal interview procedures are used.

REFERENCES

Allen, George I., et al. "Interviewing Versus Diary Keeping in Eliciting Information in a Morbidity Survey." American Journal of Public Health, 44 (July 1954), 919-27.

Alpert, Joel J.; Kosa, John; and Haggerty, Robert J. "A Month of Illnesses and Health Care among Low-Income Families." Public Health Reports 82 (August 1967), 705-13.

Boyd, Harper, and Westfall, Ralph. An Evaluation of Continuous Consumer Panels as a Source of Marketing Information. Chicago: American Marketing Association, 1960.

Colombotos, John. "Personal Versus Telephone Interviews: Effect on Responses." Public Health Reports, 84 (September 1969), 773-82.

Coombs, Lolagene, and Freedman, Ronald. "Use of Telephone Interviews in a Longitudinal Fertility Study." Public Opinion Quarterly, 28 (Spring 1964), 112-17.

Downes, Jean, and Collins, Selwyn D. "A Study of Illness among Families in the Eastern Health District of Baltimore." Milbank Memorial Fund Quarterly, 18 (January 1940), 5-26.

Ehrenberg, A. S. C. "A Study of Some Potential Biases in the Operation of a Consumer Panel." Applied Statistics, 9 (March 1960), 20-27.

Ferber, Robert. "Observations on a Consumer Panel Operation." Journal of Marketing, 17 (January 1953), 246-59.

-------. Collecting Financial Data by Consumer Panel Techniques. Urbana: Bureau of Economic and Business Research, University of Illinois, 1959.

Kemsley, W. F. F., and Nicholson, J. L. "Some Experiments in Methods of Conducting Consumer Expenditure Surveys." Journal of the Royal Statistical Society, Series A, 123 (Part 3, 1960), 307-28.

Kosa, John; Alpert, Joel J.; and Haggerty, Robert J. "On the Reliability of Family Health Information." Social Science and Medicine, 1 (July 1967), 165-81.

Life Study of Consumer Expenditures. Volume Four: Description of Operational Design and Procedures. New York: Time Inc., 1958.

Marquis, Kent H. "Survey Response Rates: Some Trends, Causes, and Correlates." In U.S. National Center For Health Services Research, Health Survey Research Methods: Second Biennial Conference, 1977. DHEW Pub. No. (PHS) 79-3207. Hyattsville, MD: NCHSR, 1978, pp. 3-12.

--------. Evaluation of Health Diary Data in the Health Insurance Study. N-1212-HEW. Santa Monica, CA: Rand Corporation, August 1979.

Mechanic, David, and Newton, Margaret "Some Problems in the Analysis of Morbidity Data." Journal of Chronic Diseases, 18 (June 1965), 569-80.

Muller, Charlotte F.; Waybur, Anne; and Weinerman, E. Richard "Methodology of a Family Health Study." Public Health Reports, 67 (November 1952), 1149-56.

Newhouse, Joseph P.; Marquis, Kent H.; Morris, Carl N. Phelps, Charles E.; and Rogers, William H. Measurement Issues in the Second Generation of Social Experiments: The Health Insurance Study. P-5701. Santa Monica, CA: Rand Corporation, August 1976.

Pearl, Robert. "Methodology of Consumer Expenditure Surveys." Working Paper No. 27. Washington, D.C.: U.S. Bureau of the Census, 1968.

Peart, A. F. W. "Canada's Sickness Survey: Review of Methods." Canadian Journal of Public Health, 43 (October 1952), 401-14.

Quackenbush, G. G., and Shaffer, J. D. Collecting Food Purchase Data by Consumer Panel--A Methodological Report on the M.S.U. Consumer Panel, 1951-58. Technical Bulletin 279. East Lansing: Agricultural Experiment Station, Michigan State University, 1960.

Roghmann, Klaus J., and Haggerty, Robert J. "The Diary as a Research Instrument in the Study of Health and Illness Behavior." Medical Care, 10 (March-April 1972), 143-63.

Siemiatycki, Jack. "A Comparison of Mail, Telephone, and Home Interview Strategies for Household Health Surveys." American Journal of Public Health, 69 (March 1979), 238-45.

Smith, Donald C., and Mosley, William. "Interim Report on the East York-Leaside Sickness Survey." Canadian Journal of Public Health, 42 (January 1951), 1-7.

Sudman, Seymour. "On the Accuracy of Recording of Consumer Panels: I and II." Journal of Marketing Research, 1 (May 1964), 14-20; 1 (August 1964), 69-83.

-------, and Bradburn, Norman. Response Effects in Surveys. Chicago: Aldine, 1974.

-------, and Ferber, Robert. "Experiments in Obtaining Consumer Expenditures by Diary Methods." Journal of the American Statistical Association, 66 (December 1971), 725-35.

------- and -------. "A Comparison of Alternative Procedures for Collecting Consumer Expenditure Data for Frequently Purchased Products." Journal of Marketing Research, 11 (May 1974), 128-35.

U.S. National Center for Health Services Research. Experiments in Interviewing Techniques: Field Experiments in Health Reporting, 1971-1977. DHEW Pub. No. (HRA) 78-3204. Hyattsville, MD: NCHSR, 1977.

U.S. National Center for Health Statistics. Measurement of Personal Health Expenditures. Vital and Health Statistics, Ser. 2, No. 2. Washington, D.C.: U.S. Government Printing Office, June 1963.

-------. Health Survey Procedure: Concepts, Questionnaire Development, and Definitions in the Health Interview Survey. Vital and Health Statistics, Ser. 1, No. 2. Washington, D.C.: U.S. Government Printing Office, May 1964.

-------. Reporting of Hospitalization in the Health Interview Survey. Vital and Health Statistics, Ser. 2, No. 6. Washington, D.C.: U.S. Government Printing Office, July 1965a.

-------. Health Interview Responses Compared with Medical Records. Vital and Health Statistics, Ser. 2, No. 7. Washington, D.C.: U.S. Government Printing Office, July 1965b.

-------. Comparison of Hospitalization Reporting in Three Survey Procedures. Vital and Health Statistics, Ser. 2, No. 8. Washington, D.C.: U.S. Government Printing Office, July 1965c.

-------. Interview Response on Health Insurance Compared with Insurance Records, United States--1960. Vital and Health Statistics, Ser. 2, No. 18. Washington, D.C.: U.S. Government Printing Office, August 1966.

-------. Interview Data on Chronic Conditions Compared with Information Derived from Medical Records. Vital and Health Statistics, Ser. 2, No. 23. Washington, D.C.: U.S. Government Printing Office, May 1967.

-------. The Influence of Interviewer and Respondent Psychological and Behavioral Variables on the Reporting in Household Interviews. Vital and Health Statistics, Ser. 2, No. 26. Washington, D.C.: U.S. Government Printing Office, March 1968.

-------. Factors Related to Response in a Health Examination Survey, United States--1960-1962. Vital and Health Statistics, Ser. 2, No. 36. Washington, D.C.: U.S. Government Printing Office, August 1969.

-------. Effect of Some Experimental Interviewing Techniques on Reporting in the Health Interview Survey. Vital and Health Statistics, Ser. 2, No. 41. Washington, D.C.: U.S. Government Printing Office, May 1971.

-------. Reporting Health Events in Household Interviews: Effects of Reinforcement, Question Length, and Reinterviews. Vital and Health Statistics, Ser. 2, No. 45. Washington, D.C.: U.S. Government Printing Office, March 1972a.

-------. Reporting Health Events in Household Interviews: Effects of an Extensive Questionnaire and a Diary Procedure. Vital and Health Statistics, Ser. 2, No. 49. Washington, D.C.: U.S. Government Printing Office, April 1972b.

-------. Quality Control and Measurement of Nonsampling Error in the Health Interview Survey. Vital and Health Statistics, Ser. 2, No. 54. Washington, D.C.: U.S. Government Printing Office, March 1973a.

-------. Net Differences in Interview Data on Chronic Conditions and Information Derived from Medical Records. Vital and Health Statistics, Ser. 2, No. 57. Washington, D.C.: U.S. Government Printing Office, June 1973b.

-------. Current Estimates from the Health Interview Survey: United States--1975. Vital and Health Statistics, Ser. 10, No. 115. Washington, D.C.: U.S. Government Printing Office, March 1977.

Verbrugge, Lois M. "Health Diaries." Proceedings, Survey Research Methods Section, American Statistical Association (1978), 271-76.

Wright, Robert A.; Beisel, Richard H.; Oliver, Julia D.; and Gerzowski, Michele C. "The Use of a Multiple Entry Diary in a Panel Study on Health Care Expenditure." Proceedings, Social Statistics Section, American Statistical Association (1976), 848-52.

APPENDIX A

FORMS USED FOR INTERVIEWING AND DATA REDUCTION

Page

Telephone Screening Interview A-1

Initial Interview A-11

Face-to-Face and Telephone Panel Interview A-19

Household Health Diary A-41

Initial Interview Coding Instructions A-61

Face-to-Face and Telephone Panel Editing Instructions A-65

Diary Editing Instructions A-67

Face-to-Face and Telephone Panel Coding Instructions A-73

Diary Coding Instructions A-91

ID # ____________

Book ______ of ______ Books

2/76

Intvr # ____________

University of Illinois
Survey Research Laboratory

HEALTH DIARIES

STUDY 250

TELEPHONE SCREENING INTERVIEW

Hello, is this *(phone number)* ? My name is __________ and I am calling from the Survey Research Laboratory of the University of Illinois. We are doing a study for the National Center for Health Statistics. I'd like to ask you some questions about the health care needs of the people in your household.

Time Interview Began ______ [ ]*AM*
[ ]*PM*

HOUSEHOLD MEMBERSHIP

1. First of all, including yourself, how many people live in this household? *(If "1", skip to Q.7a, p. 4)* /__/__/

2. How are these people related to you? *(List all persons who live in the household.)*

3a. I have listed *(read relationships)*. Is there anyone else living here now, such as friends or relatives?

Yes	1
No *(Skip to Q.4a)*	2

b. How are these people related to you? *(Record relationships in list.)*

4a. Is there anyone who usually lives in this household but is now away from home?

Yes	1
No *(Skip to Q.5)*	2

b. How are these people related to you? *(Record relationships in list.)*

c. Why is your ____________ away? *(Record reason on line next to appropriate relationship.)*

Q.2, 3b, 4b Relationship to R	*Q.4c* Why Away?
Respondent	

ENTER THE RELATIONSHIP TO R OF ALL MEMBERS OF R'S HOUSEHOLD ON THE LINE INDICATED AT THE TOP OF EACH COLUMN. ALSO RECORD THE SEX OF EACH HOUSEHOLD MEMBER.

	(1)	(2)
(If "R" lives alone record "R's" sex and skip to Q.7a) 5. I have listed ____ *(read relationships)* as members of your household. Is that right?	Respondent Sex: Male . . . 1 Female . . 2	____________ Sex: Male . . . 1 Female . . 2
(Ask only if necessary) 6. What was your _____ 's age on *(his/her)* last birthday?		/ / / years
7a. In the past year, that is since *(Date)* did anyone in your household have to limit their usual activities such as work, housework, or school due to illness or injury? Yes . . . . 1 No *(Skip to Q.8a)* 2		
b. Who was this? *(Circle appropriate response code for each person mentioned.)* c. I have listed *(read relationship)*, is there anyone else?	Limited activities due to illness or injury 1	Limited activities due to illness or injury 1
d. During the last 12 months, how many different times did *(you/your ____)* have to limit your/their usual activities for one day or more due to illness or injury?	/ / / times *Don't know . . 98*	/ / / times *Don't know . . 98*
8a. In the past year did anyone in your household go to a clinic or hospital for any reason, including x-rays, lab tests or emergency service? Yes . . . . 1 No *(Skip to Q.9)* 2		
b. Who was this? *(Circle appropriate response code for each person mentioned.)* c. I have listed *(read relationship)*, is there anyone else?	Went to hospital or clinic . . . 1	Went to hospital or clinic . . . 1
d. How many different times did *(you/your ____)* go to a hospital or clinic in the past 12 months?	/ / / times *Don't know . . 98*	/ / / times *Don't know . . 98*

(3)	(4)	(5)	(6)
Sex: Male . . . 1 Female . . 2	Sex: Male . . . 1 Female . . 2	Sex: Male . . . 1 Female . . 2	Sex: Male . . 1 Female . 2
/__/__/years	/__/__/years	/__/__/years	/__/__/years
Limited activities due to illness or injury 1	Limited activities due to illness or injury 1	Limited activities due to illness or injury 1	Limited activities due to illness or injury 1
/__/__/times *Don't know . . 98*	/__/__/times *Don't know . . 98*	/__/__/times *Don't know . . 98*	/__/__/times *Don't know . . 98*
Went to hospital or clinic . . . 1	Went to hospital or clinic . . . 1	Went to hospital or clinic . . . 1	Went to hospital or clinic . . 1
/__/__/times *Don't know . . 98*	/__/__/times *Don't know . . 98*	/__/__/times *Don't know . . 98*	/__/__/times *Don't know.. . 98*

ENTER THE RELATIONSHIP TO R OF ALL MEMBERS OF R'S HOUSEHOLD ON THE LINE INDICATED AT THE TOP OF EACH COLUMN. ALSO RECORD THE SEX OF EACH HOUSEHOLD MEMBER.

(If "R" lives alone record "R's" sex and skip to Q.7a)

	(1)	(2)
5. I have listed ____ *(read relationships)* as members of your household. Is that right?	Respondent Sex: Male . . . 1 Female . . 2	______________ Sex: Male . . . 1 Female . . 2
(Ask only if necessary) 6. What was your _____ 's age on *(his/her)* last birthday?		/ / / years

ASK FOR EACH HOUSEHOLD MEMBER

9. Within the last 12 months, about how many times did *(you/your ___)* see or phone a doctor, dentist, or other health professional about *(your/his/her)* health?	/ / / times *Don't know* . . *98*	/ / / times *Don't know* . . *98*
10a. Thinking back over the past 12 months was there any time you felt someone in your household probably should have seen a doctor or visited a clinic but for some reason did not? Yes . . . . 1 No *(Skip to Q.11)* 2		
b. Who was this? *(Circle appropriate response code for each person mentioned.)* c. I have listed *(read relationships)*, is there anyone else?	Should have seen doctor 1	Should have seen doctor 1
d. How many times would you say *(you/your ___)* felt poorly enough to see a doctor or visit a clinic but did not?	/ / /times *Don't know* . . *98*	/ / /times *Don't know* . . *98*

(3)	(4)	(5)	(6)
Sex: Male . . . 1 Female . . 2	Sex: Male . . . 1 Female . . 2	Sex: Male . . . 1 Female . . 2	Sex: Male . . 1 Female . 2
/__/__/years	/__/__/years	/__/__/years	/__/__/years
/__/__/times *Don't know . . 98*	/__/__/ times *Don't know . . 98*	/__/__/ times *Don't know . . 98*	/__/__/times *Don't know . . 98*
Should have seen doctor 1	Should have seen doctor 1	Should have seen doctor 1	Should have seen doctor 1
/__/__/times *Don't know . . 98*	/__/__/times *Don't know . . 98*	/__/__/times *Don't know . . 98*	/__/__/times *Don't know . . 98*

Ask Q.11 and 12 only if there is a woman in the household; otherwise skip to Q.13.

11. Has anyone in your household had a child in the past 12 months?

Yes 1
No 2

12. Is anyone in your household pregnant?

Yes 1
No 2

13. In the last 12 months were there any other events concerning health or medical care that occurred to any member of this household?

____

____

____

____

14. What is the highest grade of elementary, high school, or college you have completed? *(Circle highest grade or year.)*

None								00
Elementary	01	02	03	04	05	06	07	08
High school					09	10	11	12
College					13	14	15	16
Graduate school								17

15. In what year were you born? ____________

FOR RANDOM DIGIT DIALING

16a. This is the first phase of a continuing project on health care needs in Illinois. We may want to contact you again by mail. What is your name and mailing address so that we can send you a letter about this research?

____

____

____

(Skip to Q.17a)

FOR THOSE RESPONDENTS FOR WHOM WE HAVE AN ADDRESS.

b. We have your name and address as ________________________

____

Is this correct?

Yes *(Skip to Q.17a)* 1

No 2

Refused 9

(If No)

What is your name and address?

____

____

17a. What is the name of a person who would know how to contact you if you moved?

____

b. What is their address? ________________________

____

THANK YOU VERY MUCH FOR YOUR COOPERATION.

Time Interview Ended __________ [ ]*AM*
[ ]*PM*

HU Seq. #____________ 1-5
Type ____________ 6
Int. ID#____________ 7-9
Init. Int. _____0_____ 10
Method: Telephone . . . 1 11
Personal . . . 2 12
Diary Pickup . 3
Diary Mail . . 4
C: 1 13
. . . . 2 14

University of Illinois

Survey Research Laboratory

HEALTH DIARIES: PHASE III (250)

INITIAL INTERVIEW

ASSURANCE OF CONFIDENTIALITY--All information about individuals will be held in strict confidence, will be used only by persons engaged in and for the purposes of the study and will not be disclosed or released to others for any purpose. The results will be used only when combined with those of many other people.

Time interview began ______________ A. HOUSEHOLD MEMBERSHIP 1a. What are the names of all persons now living in this household? *(Record in Columns [1] through [6].)*	[1] D.01 Name/*Relationship* 15	[2] D.02 Name/*Relationship* 1-10 | DUP 11-14 | BK 15
For each person listed, circle sex and ask: b. How old is ___? *(Enter age)*	Sex 16 M . . . 1 F . . . 2 Age 17,18	Sex 16 M . . . 1 F . . . 2 Age 17,18
c. Which one of the following best describes what ___ did most of the time last month. . .	Work . . . . . 1 19 School . . . . 2 Stay at home . 3	Work . . . . . 1 19 School . . . . 2 Stay at home . 3
B. TWO-WEEK DISABILITY *For each person listed ask:*		
2. During the last two weeks, since *(date)*, did ___ stay home from work/school because of illness or injury? *(or)* During the last two weeks, since *(date)*, was ___ unable to do the household tasks or other activities ___ usually does because of illness or injury?	Yes . . . . 1 20 No-*Go to Q.4a* . . 2 *DK-Go to Q.4a* . . *8*	Yes . . . . 1 20 No-*Go to Q.4a* . . 2 *DK-Go to Q.4a* . . *8*
Ask only for those answering "Yes" to Q.2		
3a. How many days did ___ stay home from work/school? *(or)* How many days was ___ unable to do the household tasks or other activities ___ usually does?	_______ days 21,22 *DK-Go to Q. 3c* . . *98*	_______ days 21,22 *DK-Go to Q. 3c* . . *98*
b. During how many of those days did ___ have to spend most or all of the day in bed?	_______ days 23,24 *DK* *98*	_______ days 23,24 *DK* *98*
c. Is the problem which caused ___ to stay at home from work/school related to a health problem __________ has had for more than three months? *(or)* Is the problem which caused ___ to be unable to do the household tasks or other activities ___ usually does, related to a health problem __________ has had for more than three months?	Yes . . . . 1 25 No . . . . 2 *DK* *8*	Yes . . . . 1 25 No . . . . 2 *DK* *8*
C. UTILIZATION *For each person listed ask:*		
4a. Within the past month, since *(date)*, about how many times did ___ see or talk to any health professional such as a doctor, dentist, nurse or optometrist about (your/his/her) health? Please do not count the times while a patient in a hospital.	_______ times 26,27 *(If none, skip to Q.5)* *DK* *98*	_______ times 26,27 *(If none, skip to Q.5)* *DK* *98*
b. How many times did ___ see or talk to any health professional in the past two weeks?	_______ times 28,29 *DK* *98*	_______ times 28,29 *DK* *98*

[3] D.03 Name/*Relationship* 1-10 | DUP 11-14 | BK 15	[4] D.04 Name/*Relationship* 1-10 | DUP 11-14 | BK 15	[5] D.05 Name/*Relationship* 1-10 | DUP 11-14 | BK 15	[6] D. 06 Name/*Relationship* 1-10 | DUP 11-14 | BK 15
Sex 16 M . . . 1 F . . . 2 Age 17,18	Sex 16 M . . . 1 F . . . 2 Age 17,18	Sex 16 M . . . 1 F . . . 2 Age 17,18	Sex 16 M . . . 1 F . . . 2 Age 17,18
Work . . . . . 1 19 School . . . . 2 Stay at home . 3	Work . . . . . 1 19 School . . . . 2 Stay at home . 3	Work . . . . . 1 19 School . . . . 2 Stay at home . 3	Work . . . . . 1 19 School . . . . 2 Stay at home . 3
Yes . . . . 1 20 No-*Go to Q.4a* . . 2 *DK-Go to Q.4a* . . *8*	Yes . . . . 1 20 No-*Go to Q.4a* . . 2 *DK-Go to Q.4a* . . *8*	Yes . . . . 1 20 No-*Go to Q.4a* . . 2 *DK-Go to Q.4a* . . *8*	Yes . . . . 1 20 No-*Go to Q.4a* . . 2 *DK-Go to Q.4a* . . *8*
______ days 21,22 *DK-Go to Q.3c* . . *98*	______ days 21,22 *DK-Go to Q.3c* . . *98*	______ days 21,22 *DK-Go to Q.3c* . . *98*	______ days 21,22 *DK-Go to Q.3c* . . *98*
______ days 23,24 *DK* *98*	______ days 23,24 *DK* *98*	______ days 23,24 *DK* *98*	______ days 23,24 *DK* *98*
Yes . . . . 1 25 No . . . . 2 *DK* *8*	Yes . . . . 1 25 No . . . . 2 *DK* *8*	Yes . . . . 1 25 No . . . . 2 *DK* *8*	Yes . . . . 1 25 No . . . . 2 *DK* *8*
______ times 26,27 *(If none, skip to Q.5)* *DK* *98*	______ times 26,27 *(If none, skip to Q.5)* *DK* *98*	______ times 26,27 *(If none, skip to Q.5)* *DK* *98*	______ times 26,27 *(If none, skip to Q.5)* *DK* *98*
______ times 28,29 *DK* *98*	______ times 28,29 *DK* *98*	______ times 28,29 *DK* *98*	______ times 28,29 *DK* *98*

Time interview began ______________ A. HOUSEHOLD MEMBERSHIP 1a. What are the names of all persons now living in this household? *(Record in Columns [1] through [6].)*	[1] D.01 Name/*Relationship* 15	[2] D.02 1-10 DUP 11-14 BK 15 Name/*Relationship*
For each person listed, circle sex and ask: b. How old is ___? *(Enter age)*	Sex 16 M . . . 1 F . . . 2 Age 17,1	Sex 16 M . . . 1 F . . . 2 Age 17,18
c. Which one of the following best describes what ____ did most of the time last month. . .	Work . . . . . 1 19 School . . . . 2 Stay at home . 3	Work . . . . . 1 19 School . . . . 2 Stay at home . 3
For each person listed ask: 5. Thinking back over the past month, was there any time you felt ___ should have seen a health professional but for some reason did not?	Yes . . . . 1 30 No . . . . 2 *DK* *8*	Yes . . . . 1 30 No . . . . 2 *DK* *8*
D. HEALTH INSURANCE 6. Are any of ___ medical expenses paid for by Medicaid or Medicare plans?	Yes . . . . 1 31 No . . . . 2 *DK* *8*	Yes . . . . 1 31 No . . . . 2 *DK* *8*
7. (Are you/Is ___) covered by a *(another)* health insurance plan?	Yes . . . . 1 32 No . . . . 2 *DK* *8*	Yes . . . . 1 32 No . . . . 2 *DK* *8*
E. HOSPITALIZATION *For each person listed ask:* 8a. (Were you/Was ___) a patient in a hospital at any time in the last month?	Yes . . . . 1 33 No-*Go to Q.9* . . . 2 *DK-Go to Q.9* . . *8*	Yes . . . . 1 33 No-*Go to Q.9* . . . 2 *DK-Go to Q.9* . . . *8*
If "Yes" to Q.8a ask: b. How many different times was ___ in a hospital in the last month?	_______ times 34,35 *DK* *98*	_______ times 34,35 *DK* *98*
c. Thinking back, about how many nights altogether did ___ spend in the hospital?	_______ nights 36,37 *DK* *98*	_______ nights 36,37 *DK* *98*
F. OTHER HEALTH EVENTS 9. Were there any other events in the last month that occurred to any member of this household concerning health or medical care? *(Were you disabled? How many days? Did you see a health professional? How many times? Were you hospitalized? How many days?)*	38,39 40,41 ____________________ ____________________ ____________________ ____________________ ____________________	38,39 40,41 ____________________ ____________________ ____________________ ____________________ ____________________ 42-75 BK 76-78 250

[3] D.03	[4] D.04	[5] D.05	[6] D. 06
Name/*Relationship* 1-10 | DUP 11-14 | BK 15	Name/*Relationship* 1-10 | DUP 11-14 | BK 15	Name/*Relationship* 1-10 | DUP 11-14 | BK 15	Name/*Relationship* 1-10 | DUP 11-14 | BK 15
Sex 16 M . . . 1 F . . . 2 Age 17,18	Sex 16 M . . . 1 F . . . 2 Age 17,18	Sex 16 M . . . 1 F . . . 2 Age 17,18	Sex 16 M . . . 1 F . . . 2 Age 17,18
Work . . . . . 1 19 School . . . . 2 Stay at home . 3	Work . . . . . 1 19 School . . . . 2 Stay at home . 3	Work . . . . . 1 19 School . . . . 2 Stay at home . 3	Work . . . . . 1 19 School . . . . 2 Stay at home . 3
Yes . . . . 1_{30} No . . . . 2 *DK* *8*	Yes . . . . 1_{30} No . . . . 2 *DK* *8*	Yes . . . . 1_{30} No . . . . 2 *DK* *8*	Yes . . . . 1_{30} No . . . . 2 *DK* *8*
Yes . . . . 1_{31} No . . . . 2 *DK* *8*	Yes . . . . 1_{31} No . . . . 2 *DK* *8*	Yes . . . . 1_{31} No . . . . 2 *DK* *8*	Yes . . . . 1_{31} No . . . . 2 *DK* *8*
Yes . . . . 1_{32} No . . . . 2 *DK* *8*	Yes . . . . 1_{32} No . . . . 2 *DK* *8*	Yes . . . . 1_{32} No . . . . 2 *DK* *8*	Yes . . . . 1_{32} No . . . . 2 *DK* *8*
Yes . . . . 1_{33} No-*Go to Q.9* . . . 2 *DK-Go to Q.9* . . . *8*	Yes . . . . 1_{33} No-*Go to Q.9* . . . 2 *DK-Go to Q.9* . . . *8*	Yes . . . . 1_{33} No-*Go to Q.9* . . . 2 *DK-Go to Q.9* . . . *8*	Yes . . . . 1_{33} No-*Go to Q.9* . . . 2 *DK-Go to Q.9* . . . *8*
_______ times 34,35 *DK* *98*	_______ times 34,35 *DK* *98*	_______ times 34,35 *DK* *98*	_______ times 34,35 *DK* *98*
_______ nights 36,37 *DK* *98*	_______ nights 36,37 *DK* *98*	_______ nights 36,37 *DK* *98*	_______ nights 36,37 *DK* *98*
38,39 40,41 ____________________ ____________________ ____________________ ____________________ ____________________ 42-75 | BK 76-78 | 250 79,80 | 03	38,39 40,41 ____________________ ____________________ ____________________ ____________________ ____________________ 42-75 | BK 76-78 | 250 79,80 | 04	38,39 40,41 ____________________ ____________________ ____________________ ____________________ ____________________ 42-75 | BK 76-78 | 250 79,80 | 05	38,39 40,41 ____________________ ____________________ ____________________ ____________________ ____________________ 42-75 | BK 76-78 | 250 79,80 | 06

PERSONAL INTERVIEW: Deck 01

G. EDUCATION AND INCOME

10. What is the highest grade or year of school you have completed?
(Circle highest grade or year)

None 00 42,43
Elementary 01 02 03 04 05 06 07 08
High school 09 10 11 12
College 13 14 15 16
Graduate school 17

11. What was the approximate annual income for all members of your family before taxes, last year, 1975?

Please look at this card and tell me the letter which appears next to your income group. *(SHOW CARD)*

A. Under $5,000/yr. 1 44
B. $5,000 - $7,499/yr. 2
C. $7,500 - $9,999/yr. 3
D. $10,000 - $14,999/yr. 4
E. $15,000 - $19,999/yr. 5
F. $20,000 - $24,999/yr. 6
G. $25,000 or more/yr. 7
Don't know 8
Refused 9

THANK YOU.

INTERVIEWER:

12. *Circle race of respondent, but do not ask.*

White 1 45
Black 2
Spanish American 3
American Indian 4
Asian, Oriental 5
Other (Specify) 6

____

13. *How many people live in this household?* . . . . ____________ 46,47

Time interview ended ______________ [ ]*AM* [ ]*PM*

Coder ID________ 48-5
Check-Coder ID________ 51-5
54-75 | B
76-78 | 25
79,80 | 0

PHONE INTERVIEW:

Deck 01

G. EDUCATION AND INCOME

10. What is the highest grade or year of school you have completed? *(Circle highest grade or year)*

None								00	42,43
Elementary	01	02	03	04	05	06	07	08	
High school	09	10	11	12					
College	13	14	15	16					
Graduate school	17								

11. Was the approximate annual income for all members of your family before taxes, last year, 1975 . . . *(Repeat until "Yes", then circle)*

More than $25,000?	Yes	7	44
More than $20,000?	Yes	6	
More than $15,000?	Yes	5	
More than $10,000?	Yes	4	
More than $7,500?	Yes	3	
More than $5,000?	Yes	2	
	No	1	
(Don't know)		*8*	
(Refused)		*9*	

12. What is your racial background?

White	1	45
Black	2	
Spanish American	3	
American Indian	4	
Asian, Oriental	5	
Other *(Specify)* ______________	6	

THANK YOU.

13. *How many people live in this household?* . . . . ______________ 46,47

Coder ID______ 48-50

Check-Coder ID______ 51-53

Time interview ended ______________ [ ] *AM* [ ] *PM*

54-75 | BK

76-78 | 250

79,80 | 01

HU Seq. #__________ 1-5

Type __________ 6

Int. ID#__________ 7-9

Month __________ 10

Method: Telephone . . 1 11

Personal . . 2 12

Diary Pickup . 3

Diary Mail . . 4

C: 1 13

. . . . 2 14

University of Illinois
Survey Research Laboratory

HEALTH DIARIES: PHASE III

STUDY 250

ASSURANCE OF CONFIDENTIALITY -- All information about individuals will be held in strict confidence, will be used only by persons engaged in and for the purpose of the study and will not be disclosed or released to others for any purpose. The results will be used only when combined with those of many other people.

Time interview began ______ A. *(Enter name, relation to head, age, sex, and main activity of each household member from IRF.)*	[1] D.01 Name/*Relationship* 15 Respondent	[2] D.01 Name/*Relationship* 15
1. Are any of the following people no longer members of this household? *(Read first names and/or relationships, and delete as necessary)* 2. Are there any new members in this household? *(Add these)*	Sex 16 M . . . 1 F . . . 2 Age 17,18	Sex 16 M . . . 1 F . . . 2 Age 17,18
For each person listed, ask: 3. Since we last talked to you, did ___ (go to work/go to school/stay at home) most of the time? *(Correct if necessary)*	19 Work . . . . . . 1 School . . . . . 2 Stay at home . . 3	19 Work . . . . . . 1 School . . . . . 2 Stay at home . . 3
B. ONE-MONTH DISABILITY First, I would like to ask about your health and the health of those in the household since we last interviewed you. *For each person listed, ask:* 4. Since we last talked to you, a month ago, did ___ stay home from work/school because of illness or injury? *(or)* Since we last talked to you, a month ago, was ___ unable to do usual household tasks or other activities because of illness or injury?	20 Yes . . . . 1 No-*Go to Q.6,p.4* . 2 DK-*Go to Q.6,p.4* . 8	20 Yes . . . . 1 No-*Go to Q.6,p.4* . . 2 DK-*Go to Q.6,p.4* . . 8
Ask only for those answering "Yes" to Q.4 5a. How many days did ___ stay home from work/school? *(or)* How many days was ___ unable to do usual household tasks or other activities?	______ days 21,22 DK-*Go to Q.5c* . . 98	______ days 21,22 DK-*Go to Q.5c* . . . 98
b. During how many of those days did ___ have to spend most or all of the day in bed?	______ days 23,24 DK 98	______ days 23,24 DK 98
c. What was the illness or injury? *(Record one; if more than one illness, use space provided on page 16 and 17, asking Q.5c, d and e for each.)*	25,26 ______ ______ ______	25,26 ______ ______ ______
d. Did ___ take any medicine, treatment or do something else to help this illness or injury?	27 Medicine . . . . . 1 Other treatment . 2 *(Specify)*______ 28 *(Go to Q.6)* Both . . . . 3 *(Specify)*______ No *(Go to Q.6)* . . 4	27 Medicine . . . . . 1 Other treatment . 2 *(Specify)*______ 28 *(Go to Q.6)* Both . . . . 3 *(Specify)*______ No *(Go to Q.6)* . . 4
e. Was this medicine a doctor's prescription?	29 Yes . . . . 1 No 2	29 Yes . . . . 1 No 2

[3] Name/*Relationship* D.01 15	[4] Name/*Relationship* D.01 15	[5] Name/*Relationship* D.01 15	[6] Name/*Relationship* D.01 15
Sex 16 M . . . 1 F . . . 2 Age 17,18	Sex 16 M . . . 1 F . . . 2 Age 17,18	Sex 16 M . . . 1 F . . . 2 Age 17,18	Sex 16 M . . . 1 F . . . 2 Age 17,18
19 Work . . . . 1 School . . . . . . 2 Stay at home . . 3	19 Work . . . . 1 School . . . . . . 2 Stay at home . . 3	19 Work . . . . 1 School . . . . . . 2 Stay at home . . 3	19 Work . . . . 1 School . . . . . . 2 Stay at home . . 3
20 Yes . . . . 1 No-*Go to Q.6,p.4* . 2 *DK-Go to Q.6,p.4* . 8	20 Yes . . . . 1 No-*Go to Q.6,p.4* . 2 *DK-Go to Q.6,p.4* . 8	20 Yes . . . . 1 No-*Go to Q.6,p.4* . 2 *DK-Go to Q.6,p.4* . 8	20 Yes . . . . 1 No-*Go to Q.6,p.4* . 2 *DK-Go to Q.6,p.4* . 8
21,22 ______ days *DK-Go to Q.5c . . 98*	21,22 ______ days *DK-Go to Q.5c . . 98*	21,22 ______ days *DK-Go to Q.5c . . 98*	21,22 ______ days *DK-Go to Q.5c . . 98*
23,24 ______ days *DK 98*	23,24 ______ days *DK 98*	23,24 ______ days *DK 98*	23,24 ______ days *DK 98*
25,26 ______________ ______________ ______________	25,26 ______________ ______________ ______________	25,26 ______________ ______________ ______________	25,26 ______________ ______________ ______________
27 Medicine . . . . . 1 Other treatment . 2 *(Specify)*__________ 28 *(Go to Q.6)* Both . . . . 3 *(Specify)*__________ No *(Go to Q.6)* . . 4	27 Medicine . . . . . 1 Other treatment . 2 *(Specify)*__________ 28 *(Go to Q.6)* Both . . . . 3 *(Specify)*__________ No *(Go to Q.6)* . . 4	27 Medicine . . . . . 1 Other treatment . 2 *(Specify)*__________ 28 *(Go to Q.6)* Both . . . . 3 *(Specify)*__________ No *(Go to Q.6)* . . 4	27 Medicine . . . . . 1 Other treatment . 2 *(Specify)*__________ 28 *(Go to Q.6)* Both . . . . 3 *(Specify)*__________ No *(Go to Q.6)* . . 4
29 Yes . . . . 1 No 2	29 Yes . . . . 1 No 2	29 Yes . . . . 1 No 2	29 Yes . . . . 1 No 2

Time interview began ______ A. *(Enter name, relation to head, age, sex, and main activity of each household member from IRF.)*	[1] D.01 Name/*Relationship* 15 Respondent	[2] D.01 Name/*Relationship* 15
1. Are any of the following people no longer members of this household? *(Read first names and/or relationships, and delete as necessary)* 2. Are there any new members in this household? *(Add these)*	Sex 16 M . . . 1 F . . . 2 Age 17,18	Sex 16 M . . . 1 F . . . 2 Age 17,18
For each person listed, ask: 3. Since we last talked to you, did ____ (go to work/go to school/stay at home) most of the time? *(Correct if necessary)*	19 Work . . . . . . 1 School . . . . . 2 Stay at home . . 3	19 Work . . . . . . 1 School . . . . . 2 Stay at home . . 3
For each person listed, ask: 6. Since we last talked to you, a month ago, did ___ feel ill or have an injury but go to work/school anyway? *(or)* Since we last talked to you, a month ago, did ___ feel ill or have an injury but do usual household tasks or other activities anyway?	30 Yes . . . . 1 No-*Go to Q.8a,p.6* 2 *DK-Go to Q.8a,p.6* 8	30 Yes . . . . 1 No-*Go to Q.8a,p.6* 2 *DK-Go to Q.8a,p.6* 8
Ask only for those answering "Yes" to Q.6 7a. How many days did ___ feel ill or have an injury but go to work/school anyway? *(or)* How many days did ___ feel ill or have an injury but do usual household tasks or other activities anyway?	31,32 _______ days *DK* 98	31,32 _______ days *DK* 98
b. What was the illness or injury? *(Record one; if more than one illness, use space provided on page 18 and 19, asking Q.7b, c, and d for each)*	33,34 ____________ ____________ ____________ ____________	33,34 ____________ ____________ ____________ ____________
c. Did ___ take any medicine, treatment, or do something to help this illness or injury?	35 Medicine . . . . . 1 Other treatment . 2 *(Specify)*__________ ____________ 36 *(Go to Q.8a)* Both . . . . 3 *(Specify)*__________ ____________ No *(Go to Q.8a)* . 4	35 Medicine . . . . . 1 Other treatment . 2 *(Specify)*__________ ____________ 36 *(Go to Q.8a)* Both . . . . 3 *(Specify)*__________ ____________ No *(Go to Q.8a)* . 4
d. Was this medicine a doctor's prescription?	Yes . . . . 1 37 No 2	Yes . . . . 1 37 No 2

[3] *Name/Relationship* D.01 15	[4] *Name/Relationship* D.01 15	[5] *Name/Relationship* D.01 15	[6] *Name/Relationship* D.01 15
Sex 16 M . . . 1 F . . . 2 Age 17,1	Sex 16 M . . . 1 F . . . 2 Age 17,1	Sex 16 M . . . 1 F . . . 2 Age 17,18	Sex 16 M . . . 1 F . . . 2 Age 17,18
19 Work . . . . 1 School . . . . . 2 Stay at home . . 3	19 Work . . . . 1 School . . . . . 2 Stay at home . . 3	19 Work . . . . 1 School . . . . . 2 Stay at home . . 3	19 Work . . . . 1 School . . . . . 2 Stay at home . . 3
30 Yes . . . . 1 No-*Go to Q.8a,p.6* 2 *DK-Go to Q.8a,p.6* 8	30 Yes . . . . 1 No-*Go to Q.8a,p.6* 2 *DK-Go to Q.8a,p.6* 8	30 Yes . . . . 1 No-*Go to Q.8a,p.6* 2 *DK-Go to Q.8a,p.6* 8	30 Yes . . . . 1 No-*Go to Q.8a,p.6* 2 *DK-Go to Q.8a,p.6* 8
31,32 _______ days *DK* *98*	31,32 _______ days *DK* *98*	31,32 _______ days *DK* *98*	31,32 _______ days *DK* *98*
33,34 ____________________ ____________________ ____________________ ____________________	33,34 ____________________ ____________________ ____________________ ____________________	33,34 ____________________ ____________________ ____________________ ____________________	33,34 ____________________ ____________________ ____________________ ____________________
35 Medicine . . . . . 1 Other treatment . 2 *(Specify)*__________ 36 ____________________ *(Go to Q.8a)* Both . . . . 3 *(Specify)*__________ ____________________ No *(Go to Q.8a)* . 4	35 Medicine . . . . . 1 Other treatment . 2 *(Specify)*__________ 36 ____________________ *(Go to Q.8a)* Both . . . . 3 *(Specify)*__________ ____________________ No *(Go to Q.8a)* . 4	35 Medicine . . . . . 1 Other treatment . 2 *(Specify)*__________ 36 ____________________ *(Go to Q.8a)* Both . . . . 3 *(Specify)*__________ ____________________ No *(Go to Q.8a)* . 4	35 Medicine . . . . . 1 Other treatment . 2 *(Specify)*__________ 36 ____________________ *(Go to Q.8a)* Both . . . . 3 *(Specify)*__________ ____________________ No *(Go to Q.8a)* . 4
37 Yes . . . . 1 No 2	37 Yes . . . . 1 No 2	37 Yes . . . . 1 No 2	37 Yes . . . . 1 No 2

Time interview began _______ A. *(Enter name, relation to head, age, sex, and main activity of each household member from IRF.)*	[1] D.01 Name/*Relationship* 15 Respondent	[2] D.01 Name/*Relationship* 15
1. Are any of the following people no longer members of this household? *(Read first names and/or relationships, and delete as necessary)* 2. Are there any new members in this household? *(Add these)*	Sex 16 M . . . 1 F . . . 2 Age 17,18	Sex 16 M . . . 1 F . . . 2 Age 17,18
For each person listed, ask: 3. Since we last talked to you, did ___ (go to work/go to school/stay at home) most of the time? *(Correct if necessary)*	19 Work . . . . 1 School . . . . . 2 Stay at home . . 3	19 Work . . . . 1 School . . . . . 2 Stay at home . . 3

C. VISITS AND PHONE CALLS Now I would like to ask about visits and telephone calls to health professionals, such as doctors, dentists, nurses, optometrists, and osteopaths. *For each person listed ask:* 8a. Since we last talked to you, a month ago, did ___ talk on the phone or visit a doctor or other health professional? *(Exclude physicians' visits and calls while a patient in a hospital)*	38 Yes . . . . 1 No-*Go to Q.9a,p.8* 2 *DK-Go to Q.9a,p.8* 8	38 Yes . . . . 1 No-*Go to Q.9a,p.8* 2 *DK-Go to Q.9a,p.8* 8
Ask only for those answering "Yes" to Q.8a b. How many visits or telephone calls did ___ have with a doctor or other health professional?	39 ___ visits or calls *DK* 8	39 ___ visits or calls *DK* 8

(For each visit or phone call, complete one line. Record as much information as possible.)

Visit or call	*(First name of household member)*	What was the name of the health professional who was visited or called?	*(If Doctor:)* What type? *(Internist, pediatrician, etc.)*
a	15,16		17,18
b	22,23		24,25
c	29,30		31,32
d	36,37		38,39
e	43,44		45,46
f	50,51		52,53
g	57,58		59,60
h	64,65		66,67
i	15,16		17,18
j	22,23		24,25
k	29,30		31,32
l	36,37		38,39

[3] Name/*Relationship* D.01 15	[4] Name/*Relationship* D.01 15	[5] Name/*Relationship* D.01 15	[6] Name/*Relationship* D.01 15
Sex 16 M . . . 1 F . . . 2 Age 17,18	Sex 16 M . . . 1 F . . . 2 Age 17,18	Sex 16 M . . . 1 F . . . 2 Age 17,18	Sex 16 M . . . 1 F . . . 2 Age 17,18
19 Work . . . . 1 School . . . . . . 2 Stay at home . . 3	19 Work . . . . 1 School . . . . . . 2 Stay at home . . 3	19 Work . . . . 1 School . . . . . . 2 Stay at home . . 3	19 Work . . . . 1 School . . . . . . 2 Stay at home . . 3
38 Yes . . . . 1 No-*Go to Q.9a,p.8* 2 *DK-Go to Q.9a,p.8* 8	38 Yes . . . . 1 No-*Go to Q.9a,p.8* 2 *DK-Go to Q.9a,p.8* 8	38 Yes . . . . 1 No-*Go to Q.9a,p.8* 2 *DK-Go to Q.9a,p.8* 8	38 Yes . . . . 1 No-*Go to Q.9a,p.8* 2 *DK-Go to Q.9a,p.8* 8
39 ___ visits or calls *DK* 8	39 ___ visits or calls *DK* 8	39 ___ visits or calls *DK* 8	39 ___ visits or calls *DK* 8

How was this person contacted? *(Circle one)*				What was the reason for this visit or call? *(Check-up, sprained wrist, etc.)*	Visit or call
Office visit	Phone	Home visit	Other *(Specify)*		
1	2	3	4 19	20,21	a
1	2	3	4 26	27,28	b
1	2	3	4 33	34,35	c
1	2	3	4 40	41,42	d
1	2	3	4 47	48,49	e
1	2	3	4 54	55,56	f
1	2	3	4 61	62,63	g
1	2	3	4 68	69,70	h
1	2	3	4 19	20,21	i
1	2	3	4 26	27,28	j
1	2	3	4 33	34,35	k
1	2	3	4 40	41,42	l

1-14|DUP

71-75|BK
76-78|250
79,80|20
1-14|DUP

Time interview began ______ A. *(Enter name, relation to head, age, sex, and main activity of each household member from IRF.)*	[1] D.01 Name/*Relationship* 15 Respondent		[2] D.01 Name/*Relationship* 15	
1. Are any of the following people no longer members of this household? *(Read first names and/or relationships, and delete as necessary)* 2. Are there any new members in this household? *(Add these)*	16 Sex M . . . 1 F . . . 2	17,18 Age	16 Sex M . . . 1 F . . . 2	17,18 Age
For each person listed, ask: 3. Since we last talked to you, did ____ (go to work/go to school/stay at home) most of the time? *(Correct if necessary)*	19 Work . . . . . . 1 School . . . . . 2 Stay at home . . 3		19 Work . . . . . . 1 School . . . . . 2 Stay at home . . 3	

D. INSTITUTIONAL CARE

Now I would like to ask about other medical care received from hospitals, clinics, nursing homes or other organizations.

For each person listed ask: 9a. Since we last talked to you, a month ago, did ___ receive any medical care at a hospital, either as an out-patient or inpatient, or at a clinic or nursing home or other medical organization?	40 Yes . . . . 1 No-*Go to Q.10,p.10* 2 *DK-Go to Q.10,p.10* 8	40 Yes . . . . 1 No-*Go to Q.10,p.10* 2 *DK-Go to Q.10,p.10* 8
Ask only for those answering "Yes" to Q.9a b. How many times did ___ receive medical care at these places?	41 ______ times *DK* 8	41 ______ times *DK* 8

(For each contact at a medical organization, complete one line.

Record as much information as possible.)

Medical organization	*(First name of household member who received care)*	What is the name and type of organization? *(Hospital, clinic, etc.)*
a	43,44	45,46
b	50,51	52,53
c	57,58	59,60
d	64,65	66,67
e	15,16	17,18
f	22,23	24,25
g	29,30	31,32
h	36,37	38,39
i	43,44	45,46
j	50,51	52,53
k	52,58	59,60
l	64,65	66,67

[3] Name/*Relationship* D.01 15	[4] Name/*Relationship* D.01 15	[5] Name/*Relationship* D.01 15	[6] Name/*Relationship* D.01 15
Sex 16 M . . . 1 F . . . 2 Age 17,18	Sex 16 M . . . 1 F . . . 2 Age 17,18	Sex 16 M . . . 1 F . . . 2 Age 17,18	Sex 16 M . . . 1 F . . . 2 Age 17,18
19 Work . . . . 1 School . . . . . 2 Stay at home . . 3	19 Work . . . . 1 School . . . . . 2 Stay at home . . 3	19 Work . . . . 1 School . . . . . 2 Stay at home . . 3	19 Work . . . . 1 School . . . . . 2 Stay at home . . 3
40 Yes . . . . 1 No-*Go to Q.10,p.10* 2 *DK-Go to Q.10,p.10* 8	40 Yes . . . . 1 No-*Go to Q.10,p.10* 2 *DK-Go to Q.10,p.10* 8	40 Yes . . . . 1 No-*Go to Q.10,p.10* 2 *DK-Go to Q.10,p.10* 8	40 Yes . . . . 1 No-*Go to Q.10,p.10* 2 *DK-Go to Q.10,p.10* 8
41 _______ times *DK 8*	41 _______ times *DK 8*	41 _______ times *DK 8*	41 _______ times *DK 8*

If hospital, was it overnight or longer?			What was the reason for medical care? *(Illness, injury, etc.)*		Medical organization
Yes	No				
1	2	47		48,49	a
1	2	54		55,56	b
1	2	61		62,63	c
1	2	68		69,70	d
1	2	19		20,21	e
1	2	26		27,28	f
1	2	33		34,35	g
1	2	40		41,42	h
1	2	47		48,49	i
1	2	54		55,56	j
1	2	61		62,63	k
1	2	68		69,70	l

71-75 | BK
76-78 | 250
79,80 | 21
1-14 | DUP

71-75 | BK
76-78 | 250

Time interview began ____ A. *(Enter name, relation to head, age, sex, and main activity of each household member from IRF.)*	[1] D.01 Name/*Relationship* 15 Respondent	[2] D.01 Name/*Relationship* 15
1. Are any of the following people no longer members of this household? *(Read first names and/or relationships, and delete as necessary)* 2. Are there any new members in this household? *(Add these)*	Sex 16 M . . . 1 F . . . 2 Age 17,18	Sex 16 M . . . 1 F . . . 2 Age 17,18
For each person listed, ask: 3. Since we last talked to you, did ____ (go to work/go to school/stay at home) most of the time? *(Correct if necessary)*	19 Work . . . . 1 School . . . . . 2 Stay at home . . 3	19 Work . . . . 1 School . . . . . 2 Stay at home . . 3

E. MEDICAL SUPPLIES OBTAINED

Next, I would like to ask about medical supplies that have been obtained. *For each person listed ask:* 10. Since our interview, a month ago, were any medicine, glasses or other medical supplies obtained for ____?	42 Yes . . . . 1 No-*Go to Q.11,p.12* . 2 DK-*Go to Q.11,p.12* . 8	42 Yes . . . . 1 No-*Go to Q.11,p.12* . 2 DK-*Go to Q.11,p.12* . 8

(For each medical supply obtained, complete one line.)

Item obtained	*(First name of household member for whom medical supply was obtained)*	What was obtained?	Was this a doctor's prescription?	
			Yes	No
a	15,16	17,18	1	2 19
b	30,31	32,33	1	2 34
c	45,46	47,48	1	2 49
d	60,61	62,63	1	2 64
e	15,16	17,18	1	2 19
f	30,31	32,33	1	2 34
g	45,46	47,48	1	2 49
h	60,61	62,63	1	2 64
i	15,16	17,18	1	2 19
j	30,31	32,33	1	2 34
k	45,46	47,48	1	2 49
l	60,61	62,63	1	2 64
m	15,16	17,18	1	2 19
n	30,31	32,33	1	2 34

(Probe to be sure that all *medical supplies for each household member have been recorded. If additional space is required, continue on page 20.)*

[3] Name/*Relationship* D.01 15	[4] Name/*Relationship* D.01 15	[5] Name/*Relationship* D.01 15	[6] Name/*Relationship* D.01 15
Sex 16 M . . . 1 F . . . 2 Age 17,18	Sex 16 M . . . 1 F . . . 2 Age 17,18	Sex 16 M . . . 1 F . . . 2 Age 17,18	Sex 16 M . . . 1 F . . . 2 Age 17,18
19 Work . . . . 1 School . . . . . 2 Stay at home . . 3	19 Work . . . . 1 School . . . . . 2 Stay at home . . 3	19 Work . . . . 1 School . . . . . 2 Stay at home . . 3	19 Work . . . . 1 School . . . . . 2 Stay at home . . 3
42 Yes . . . . 1 No-*Go to Q.11,p.12* . 2 *DK-Go to Q.11,p.12 . 8*	42 Yes . . . . 1 No-*Go to Q.11,p.12* . 2 *DK-Go to Q.11,p.12 . 8*	42 Yes . . . . 1 No-*Go to Q.11,p.12* . 2 *DK-Go to Q.11,p.12 . 8*	42 Yes . . . . 1 No-*Go to Q.11,p.12* . 2 *DK-Go to Q.11,p.12 . 8*

1-14 | DUP

When was this obtained? *(Date)*	What was the total cost to (you/him/her) for this item? *(Tax included)*	Was this item partially or fully covered by insurance? *(Circle one)*				Item obtained	
		Not covered	Partially covered	Fully covered	*(Don't know coverage)*		
20,23	24,28 $	1	2	3	*8* 29	a	
35,38	39,43 $	1	2	3	*8* 44	b	
50,53	54,58 $	1	2	3	*8* 59	c	75 | BK
65,68	69,73 $	1	2	3	*8* 74	d	76-78 | 250 79,80 | 23
20,23	24,28 $	1	2	3	*8* 29	e	1-14 | DUP
35,38	39,43 $	1	2	3	*8* 44	f	
50,53	54,58 $	1	2	3	*8* 59	g	75 | BK
65,68	69,73 $	1	2	3	*8* 74	h	76-78 | 250 79,80 | 24
20,23	24,28 $	1	2	3	*8* 29	i	1-14 | DUP
35,38	39,43 $	1	2	3	*8* 44	j	
50,53	54,58 $	1	2	3	*8* 59	k	75 | BK
65,68	69,73 $	1	2	3	*8* 74	l	76-78 | 250 79,80 | 25
20,23	24,28 $	1	2	3	*8* 29	m	1-14 | DUP
35,38	39,43 $	1	2	3	*8* 44	n	

Time interview began ______ A. *(Enter name, relation to head, age, sex, and main activity of each household member from IRF.)*	[1] Name/Relationship Respondent	D.01 15	[2] Name/Relationship	D.01 15
1. Are any of the following people no longer members of this household? *(Read first names and/or relationships, and delete as necessary)* 2. Are there any new members in this household? *(Add these)*	16 Sex M . . . 1 F . . . 2	17,18 Age	16 Sex M . . . 1 F . . . 2	17,18 Age
For each person listed, ask: 3. Since we last talked to you, did ___ (go to work/go to school/stay at home) most of the time? *(Correct if necessary)*	19 Work . . . . 1 School . . . . . 2 Stay at home . . 3		19 Work . . . . 1 School . . . . . 2 Stay at home . . 3	
F. MEDICAL PROVIDER PAYMENTS 11. I would also like to ask about payments to doctors, dentists, and others who provide medical care. Regardless of when the service was received, did anyone in your household make any payment to a doctor, dentist, optometrist, osteopath, or other health professional since we last talked to you?	43 Yes . . . . 1 No-*Go to Q.12,p.14* . 2 DK-*Go to Q.12,p.14* . 8		43 Yes . . . . 1 No-*Go to Q.12,p.14* . 2 DK-*Go to Q.12,p.14* . 8	

(For each individual payment, complete one line.)

Payment	Who received medical care for this payment? *(First name of household member)*	To whom was this payment made? *(Name of medical care provider)*
a	45,46	47,48
b	59,60	61,62
c	15,16	17,18
d	29,30	31,32
e	43,44	45,46
f	57,58	59,60
g	15,16	17,18
h	29,30	31,32
i	43,44	45,46
j	57,58	59,60
k	15,16	17,18
l	29,30	31,32
m	43,44	45,46
n	57,58	59,60

(Probe to be sure that all medical care provider payments for each household member have been recorded.)

[3] Name/*Relationship* D.01 15	[4] Name/*Relationship* D.01 15	[5] Name/*Relationship* D.01 15	[6] Name/*Relationship* D.01 15
Sex 16 M . . . 1 F . . . 2	Sex 16 M . . . 1 F . . . 2	Sex 16 M . . . 1 F . . . 2	Sex 16 M . . . 1 F . . . 2
Age 17,1	Age 17,1	Age 17,18	Age 17,18
19 Work . . . . 1 School . . . . . . 2 Stay at home . . 3	19 Work . . . . 1 School . . . . . . 2 Stay at home . . 3	19 Work . . . . 1 School . . . . . . 2 Stay at home . . 3	19 Work . . . . 1 School . . . . . . 2 Stay at home . . 3
43 Yes . . . . 1 No-*Go to Q.12,p.14* . 2 DK-*Go to Q.12,p.14* . 8	43 Yes . . . . 1 No-*Go to Q.12,p.14* . 2 DK-*Go to Q.12,p.14* . 8	43 Yes . . . . 1 No-*Go to Q.12,p.14* . 2 DK-*Go to Q.12,p.14* . 8	43 Yes . . . . 1 No-*Go to Q.12,p.14* . 2 DK-*Go to Q.12,p.14* . 8

When was this payment made? *(Date)*	What was the amount that was paid?	Was this bill partially or fully covered by insurance? *(Circle one)*				Payment
		Not covered	Partially covered	Fully covered	*(Don't know coverage)*	
49-52	$ 53-57	1	2	3	8 58	a
63-66	$ 67-71	1	2	3	8 72	b
19-22	$ 23-27	1	2	3	8 28	c
33-36	$ 37-41	1	2	3	8 42	d
47-50	$ 51-55	1	2	3	8 56	e
61-64	$ 65-69	1	2	3	8 70	f
19-22	$ 23-27	1	2	3	8 28	g
33-36	$ 37-41	1	2	3	8 42	h
47-50	$ 51-55	1	2	3	8 56	i
61-64	$ 65-69	1	2	3	8 70	j
19-22	$ 23-27	1	2	3	8 28	k
33-36	$ 37-41	1	2	3	8 42	l
47-50	$ 57-55	1	2	3	8 56	m
61-64	$ 65-69	1	2	3	8 70	n

73-75 | BK
76-78 | 250
79,80 | 26
1-14 | DUP

71-75 | BK
76-78 | 250
79,80 | 27
1-14 | DUP

71-75 | BK
76-78 | 250
79,80 | 28
1-14 | DUP

71-75 | BK
76-78 | 250
79,80 | 29

Time interview began _______ A. *(Enter name, relation to head, age, sex, and main activity of each household member from IRF.)*	[1] D.01 Name/*Relationship* 15 Respondent	[2] D.01 Name/*Relationship* 15
1. Are any of the following people no longer members of this household? *(Read first names and/or relationships, and delete as necessary)* 2. Are there any new members in this household? *(Add these)*	Sex 16 M . . . 1 F . . . 2 Age 17,18	Sex 16 M . . . 1 F . . . 2 Age 17,18
For each person listed, ask: 3. Since we last talked to you, did ____ (go to work/go to school/stay at home) most of the time? *(Correct if necessary)*	19 Work . . . . . . 1 School . . . . . 2 Stay at home . . 3	19 Work . . . . . . 1 School . . . . . 2 Stay at home . . 3
G. ORGANIZATION PAYMENTS 12. Finally, I would like to ask about payments to hospitals, nursing homes, clinics, or other medical organizations. Regardless of when the service was received, did anyone in your household make any payment to a hospital, nursing home, clinic or other medical organization since we last talked to you? *(Exclude any charges for doctor's services.)*	44 Yes . . . . 1 No-*Thank respondent--* *End interview* . . 2 *DK-Thank Respondent--* *End interview* . . 8 45,46 47-73 BK	44 Yes . . . . 1 No-*Thank respondent--* *End interview* . . 2 *DK-Thank Respondent--* *End interview* . . 8 45-73 BK
13. *How many people currently live in this household?* ________	74,75 01 76-78 250 79,80 01	74-75 02 76-78 250 79,80 02

(For each individual payment, complete one line.)

Time interview ended ________ [ ]*AM* [ ]*PM*

Payment	Who received medical care for this payment? *(First name of household member)*	To what organization was this payment made? *(Name and type of organization e.g. hospital, clinic)*
a	15,16	17,18
b	29,30	31,32
c	43,44	45,46
d	57,58	59,60
e	15,16	17,18
f	29,30	31,32
g	43,44	45,46
h	57,58	59,60
i	15,16	17,18
j	29,30	31,32
k	43,44	45,46
l	57,58	59,60
m	15,16	17,18
n	29,30	31,32

[3] *Name/Relationship* D.01 15	[4] *Name/Relationship* D.01 15	[5] *Name/Relationship* D.01 15	[6] *Name/Relationship* D.01 15
Sex 16 M . . . 1 F . . . 2	Sex 16 M . . . 1 F . . . 2	Sex 16 M . . . 1 F . . . 2	Sex 16 M . . . 1 F . . . 2
Age 17,1	Age 17,18	Age 17,18	Age 17,18
Work . . . . . . 1 19 School . . . . . 2 Stay at home . . 3	Work . . . . . . 1 19 School . . . . . 2 Stay at home . . 3	Work . . . . . . 1 19 School . . . . . 2 Stay at home . . 3	Work . . . . . . 1 19 School . . . . . 2 Stay at home . . 3
Yes . . . . 1 44 No-*Thank respondent--* *End interview* . . 2 *DK-Thank Respondent--* *End interview* . . 8	Yes . . . . 1 44 No-*Thank respondent--* *End interview* . . 2 *DK-Thank Respondent--* *End interview* . . 8	Yes . . . . 1 44 No-*Thank respondent--* *End interview* . . 2 *DK-Thank Respondent--* *End interview* . . 8	Yes . . . . 1 44 No-*Thank respondent--* *End interview* . . 2 *DK-Thank Respondent--* *End interview* . . 8
45-73 | BK 74,75 | 03	45-73 | BK 74,75 | 04	45-73 | BK 74,75 | 05	45-73 | BK 74,75 | 06
76-78 | 250 79,80 | 03	76-78 | 250 79,80 | 04	76-78 | 250 79,80 | 05	76-78 | 250 79,80 | 06

1-14 | DUP

When was this payment made? *(Date)*	What was the amount that was paid?	Was this bill partially or fully covered by insurance? *(Circle one)*				Payment	
		Not covered	Partially covered	Fully covered	*(Don't know coverage)*		
19-22	23-27 $	1	2	3	28 8	a	
33-36	37-41 $	1	2	3	42 8	b	
47-50	51-55 $	1	2	3	56 8	c	71-75 | BK
61-64	65-69 $	1	2	3	70 8	d	76-78 | 250 79,80 | 30
19-22	23-27 $	1	2	3	28 8	e	1-14 | DUP
33-36	37-41 $	1	2	3	42 8	f	
47-50	51-55 $	1	2	3	56 8	g	71-75 | BK
61-64	65-69 $	1	2	3	70 8	h	76-78 | 250 79,80 | 31
19-22	23-27 $	1	2	3	8 28	i	1-14 | DUP
33-36	37-41 $	1	2	3	8 42	j	
47-50	51-55 $	1	2	3	8 56	k	71-75 | BK
61-64	65-69 $	1	2	3	8 70	l	76-78 | 250 79,80 | 32
19-22	23-27 $	1	2	3	8 28	m	1-14 | DUP
33-36	37-41 $	1	2	3	8 42	n	

43-75 | BK
76-78 | 250
79,80 | 33

1-14 | DUP *(Continued from Section B, Questions 5c-e)*

	First name 15,16 ____________ Relation to head ____________	First name 29,30 ____________ Relation to head ____________
5c. What was the illness or injury? *(Record one)*	17,18 ____________ ____________ ____________	31,32 ____________ ____________ ____________
d. Did ___ take any medicine, treatment or do something else to help this illness or injury?	19 Medicine . . . . . 1 Other treatment . 2 *(Specify)*____________ *(Go to Q.6)* 20 Both . . . . 3 *(Specify)*____________ No *(Go to Q.6)* . . 4	3 Medicine . . . . . 1 Other treatment . 2 *(Specify)*____________ *(Go to Q.6)* 3 Both . . . . 3 *(Specify)*____________ No *(Go to Q.6)* . . 4
e. Was this medicine a doctor's prescription?	21 Yes . . . . 1 No 2	3 Yes . . . . 1 No 2

(Continued from Section B, Questions 5c-e)

	First name 22,23 ____________ Relation to head ____________	First name 36,37 ____________ Relation to head ____________
5c. What was the illness or injury? *(Record one)*	24,25 ____________ ____________ ____________	38,39 ____________ ____________ ____________
d. Did ___ take any medicine, treatment or do something else to help this illness or injury?	26 Medicine . . . . . 1 Other treatment . 2 *(Specify)*____________ *(Go to Q.6)* 27 Both . . . . 3 *(Specify)*____________ No *(Go to Q.6)* . . 4	40 Medicine . . . . . 1 Other treatment . 2 *(Specify)*____________ *(Go to Q.6)* 41 Both . . . . 3 *(Specify)*____________ No *(Go to Q.6)* . . 4
e. Was this medicine a doctor's prescription?	28 Yes . . . . 1 No 2	42 Yes . . . . 1 No 2

A-35 71-75 | BK
76-78 | 250
79,80 | 34
1-14 | DUP

First name 43,44 Relation to head	First name 57,58 Relation to head	First name 15,16 Relation to head	First name 29,30 Relation to head
45,46	59,60	17,18	31,32
47 Medicine . . . . . 1 Other treatment . 2 *(Specify)* 48 *(Go to Q.6)* Both . . . . 3 *(Specify)* No *(Go to Q.6)* . . 4	61 Medicine . . . . . 1 Other treatment . 2 *(Specify)* 62 *(Go to Q.6)* Both . . . . 3 *(Specify)* No *(Go to Q.6)* . . 4	19 Medicine . . . . . 1 Other treatment . 2 *(Specify)* 20 *(Go to Q.6)* Both . . . . 3 *(Specify)* No *(Go to Q.6)* . . 4	33 Medicine . . . . . 1 Other treatment . 2 *(Specify)* 34 *(Go to Q.6)* Both . . . . 3 *(Specify)* No *(Go to Q.6)* . . 4
49 Yes . . . . 1 No 2	63 Yes . . . . 1 No 2	21 Yes . . . . 1 No 2	35 Yes . . . . 1 No 2

First name 50,51 Relation to head	First name 64,65 Relation to head	First name 22,23 Relation to head	First name 36,37 Relation to head
52,53	66,67	24,25	38,39
54 Medicine . . . . . 1 Other treatment . 2 *(Specify)* *(Go to Q.6)* 55 Both . . . . 3 *(Specify)* No *(Go to Q.6)* . . 4	68 Medicine . . . . . 1 Other treatment . 2 *(Specify)* *(Go to Q.6)* 69 Both . . . . 3 *(Specify)* No *(Go to Q.6)* . . 4	26 Medicine . . . . . 1 Other treatment . 2 *(Specify)* *(Go to Q.6)* 27 Both . . . . 3 *(Specify)* No *(Go to Q.6)* . . 4	40 Medicine . . . . . 1 Other treatment . 2 *(Specify)* *(Go to Q.6)* 41 Both . . . . 3 *(Specify)* No *(Go to Q.6)* . . 4
56 Yes . . . . 1 No 2	70 Yes . . . . 1 No 2	28 Yes . . . . 1 No 2	42 Yes . . . . 1 No 2

(Continued from Section B, Questions 7b-d)

	First name 43,44 __________ Relation to head __________	First name 57,58 __________ Relation to head __________
7b. What was the illness or injury? *(Record one)*	45,46 __________ __________ __________	59,60 __________ __________ __________
c. Did ___ take any medicine, treatment or do something else to help this illness or injury?	47 Medicine . . . . . 1 Other treatment . 2 *(Specify)*________ *(Go to Q.8a)* 48 Both . . . . 3 *(Specify)*________ No *(Go to Q.8a)*. . 4	61 Medicine . . . . . 1 Other treatment . 2 *(Specify)*________ *(Go to Q.8a)* 62 Both . . . . 3 *Specify)*________ No *(Go to Q.8a)*. . 4
d. Was this medicine a doctor's prescription?	49 Yes . . . . 1 No 2	63 Yes . . . . 1 No 2

(Continued from Section B, Questions 7b-d)

	First name 50,51 __________ Relation to head __________	First name 64,65 __________ Relation to head __________
7b. What was the illness or injury? *(Record one)*	52,53 __________ __________ __________	66,67 __________ __________ __________
c. Did ___ take any medicine, treatment or do something else to help this illness or injury?	54 Medicine . . . . . 1 Other treatment . 2 *(Specify)*________ *(Go to Q.8a)* 55 Both . . . . 3 *(Specify)*________ No *(Go to Q.8a)*. . 4	68 Medicine . . . . . 1 Other treatment . 2 *(Specify)*________ *(Go to Q.8a)* 69 Both . . . . 3 *Specify)*________ No *(Go to Q.8a)*. . 4
d. Was this medicine a doctor's prescription?	56 Yes . . . . 1 No 2	70 Yes . . . . 1 No 2

71-75 | BK
76-78 | 250
79,80 | 35   1-14 | DUP

First name 15,16	First name 29,30	First name 43,44	First name 57,58
Relation to head	Relation to head	Relation to head	Relation to head
17,18	31,32	45,46	59,60
19 Medicine . . . . . 1 Other treatment . 2 *(Specify)*______ *(Go to Q.8a)* 20 Both . . . . 3 *(Specify)*______ No *(Go to Q.8a)*. . 4	33 Medicine . . . . . 1 Other treatment . 2 *(Specify)*______ *(Go to Q.8a)* 34 Both . . . . 3 *(Specify)*______ No *(Go to Q.8a)*. . 4	47 Medicine . . . . . 1 Other treatment . 2 *(Specify)*______ *(Go to Q. 8a)* 48 Both . . . . 3 *(Specify)*______ No *(Go to Q. 8a)*. . 4	61 Medicine . . . . . 1 Other treatment . 2 *(Specify)*______ *(Go to Q.8a)* 62 Both . . . . 3 *(Specify)*______ No *(Go to Q.8a)*. . 4
21 Yes . . . . 1 No 2	35 Yes . . . . 1 No 2	49 Yes . . . . 1 No 2	63 Yes . . . . 1 No 2

First name 22,23	First name 36,37	First name 50,51	First name 64,6
Relation to head	Relation to head	Relation to head	Relation to head
24,25	38,39	52,53	66,6
26 Medicine . . . . . 1 Other treatment . 2 *(Specify)*______ 27 *(Go to Q.8a)* Both . . . . 3 *(Specify)*______ No *(Go to Q.8a)*. . 4	40 Medicine . . . . . 1 Other treatment . 2 *(Specify)*______ *(Go to Q.8a)* 41 Both . . . . 3 *(Specify)*______ No *(Go to Q.8a)*. . 4	54 Medicine . . . . . 1 Other treatment . 2 *(Specify)*______ *(Go to Q. 8a)* 55 Both . . . . 3 *(Specify)*______ No *(Go to Q. 8a)*. . 4	6 Medicine . . . . . 1 Other treatment . 2 *(Specify)*______ *(Go to Q. 8a)* 6 Both . . . . 3 *(Specify)*______ No *(Go to Q. 8a)*. . 4
28 Yes . . . . 1 No 2	42 Yes . . . . 1 No 2	56 Yes . . . . 1 No 2	70 Yes . . . . 1 No 2

71-75	BK
76-78	250
79,80	36
1-14	DUP

Medical Supplies Obtained *(Continued from Section E, Q.10)*

Item obtained	*(First name of household member for whom medical supply was obtained)*	What was obtained?	Was this a doctor's prescription?	
			Yes	No
o	15,16	17,18	1	2^{19}
p	30,31	32,33	1	2^{34}
q	45,46	47,48	1	2^{49}
r	60,61	62,63	1	2^{64}
s	15,16	17,18	1	2^{19}
t	30,31	32,33	1	2^{34}
u	45,46	47,48	1	2^{49}
v	60,61	62,63	1	2^{64}
w	15,16	17,18	1	2^{19}
x	30,31	32,33	1	2^{34}
y	45,46	47,48	1	2^{49}
z	60,61	62,63	1	2^{64}
aa	15,16	17,18	1	2^{19}
bb	30,31	32,33	1	2^{34}

(Probe to be sure that *__all__* *medical supplies for each household member have been recorded.)*

When was this obtained? *(Date)*	What was the total cost to (you/him/her) for this item? *(Tax included)*	Was this item partially or fully covered by insurance? *(Circle one)*				Item obtained
		Not covered	Partially covered	Fully covered	*(Don't know coverage)*	
20,23	24,28 $	1	2	3	8 29	o
35,38	39,43 $	1	2	3	8 44	p
50,53	54,58 $	1	2	3	8 59	q
65,68	69,73 $	1	2	3	8 74	r
20,23	24,28 $	1	2	3	8 29	s
35,38	39,43 $	1	2	3	8 44	t
50,53	54,58 $	1	2	3	8 59	u
65,68	69,73 $	1	2	3	8 74	v
20,23	24,28 $	1	2	3	8 29	w
35,38	39,43 $	1	2	3	8 44	x
50,53	54,58 $	1	2	3	8 59	y
65,68	69,73 $	1	2	3	8 74	z
20,23	24,28 $	1	2	3	8 29	aa
35,38	39,43 $	1	2	3	8 44	bb

75 | BK
76-78 | 250
79,80 | 37

75 | BK
76-78 | 250
79,80 | 38

75 | BK
76-78 | 25
79,80 | 39

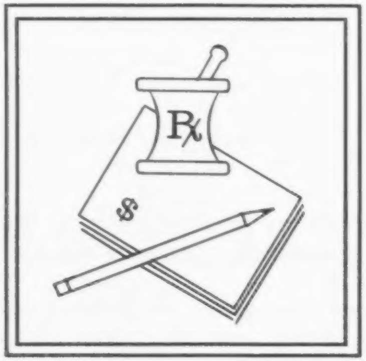
45-75 | BK
76-78 | 250
79,80 | 40

University of Illinois
Survey Research Laboratory

HOUSEHOLD HEALTH DIARY

CONTENTS

If anyone . . .	Enter on page
Stayed home from work or school	3
Felt ill but went to work or school . .	5
Visited or called a doctor, dentist, optometrist, etc.	7
Went to a hospital or clinic	9
Obtained medicine, glasses, or other medical supplies.	11
Paid doctor or hospital bills	13



Household Number ____________________

Month ______________________________

Starting Date ______________________

Ending Date ________________________

SRL - 250
10-76

ASSURANCE OF CONFIDENTIALITY--All information about individuals will be held in strict confidence, will be used only by persons engaged in and for the purposes of the study and will not be disclosed or released to others for any purpose. The results will be used only when combined with those of many other people.

GENERAL INSTRUCTIONS FOR KEEPING THIS DIARY

1. Information from this diary can help to determine the medical needs of people in the United States. Since it is so important we appreciate your doing your best to make the data as complete as possible. Always make entries in the diary at the time that they happen so you won't forget.

2. Be sure to include all household members--adults, children and babies. Do not include short-time visitors, but include all others living in this house, even if not related to you.

3. Record any notes on page 15.

4. If you have any questions about how to report something in this diary please call:

Interviewer Name ______________________________

Telephone Number ____________________

or consult the specific instructions and sample pages which appear before each table.

STAYED HOME FROM WORK OR SCHOOL OR COULD NOT DO USUAL HOUSEHOLD TASKS

1. List all illnesses during this month to all household members who had to stay home from school, work, or could not do their usual job.

2. If the same person starts off a little sick, but goes to work for two days and then stays home for two more days until he is recovered, you would report the first two days on page 5 and the last two days on page 3.

SAMPLE

Date first stayed home	Date resumed usual activities	Who in the family? *(First name)*	Why did they stay home? *(Headache, cold, cramps, sprained ankle, etc.)*	Did they stay in bed all or part of the day? *(Check one)*		What medicine or treatment was used? *(Check one)*		
				Yes	No	None	Prescription *(Name, if known)*	If other, what?
Oct. 7	Oct 9	John	Flu	✓				Aspirin
Oct. 13	Oct. 14	Mary	Stomach cramps	✓		✓		
Oct. 14	Oct. 19	John Jr.	Dislocated shoulder	✓			Plaster cast	

STAYED HOME FROM WORK OR SCHOOL OR COULD NOT DO USUAL HOUSEHOLD TASKS

Date first stayed home	Date resumed usual activities	Who in the family? *(First name)*	Why did they stay home? *(Headache, cold, cramps, sprained ankle, etc.)*	Did they stay in bed all or part of the day? *(Check one)*		What medicine or treatment was used? *(Check one)*		
				Yes	No	None	Prescription *(Name, if known)*	If other, what?

FELT ILL BUT WENT TO WORK OR SCHOOL OR DID USUAL HOUSEHOLD TASKS

1. List all illnesses during this month to all household members who did not feel as good as usual, but still went to work or school or did their usual jobs.
2. If the same person starts off a little sick, but goes to work for two days and then stays home for two more days until he is recovered, you would report the first two days on page 5 and the last two days on page 3.

SAMPLE

Date first felt ill	Date felt better or got sicker and stayed home	Who in the family? *(First name)*	Why did they feel ill? *(Headache, cold, cramps, sprained ankle, etc.)*	What medicine or treatment was used? *(Check one)*		
				None	Prescription *(Name, if known)*	If other, what?
Oct. 9	Oct. 11	John	Cold			Contact, cold capsules
Oct. 14	Oct. 15	Mary	Felt weak	✓		

FELT ILL BUT WENT TO WORK OR SCHOOL OR DID USUAL HOUSEHOLD TASKS

Date first felt ill	Date felt better or got sicker and stayed home	Who in the family? *(First name)*	Why did they feel ill? *(Headache, cold, cramps, sprained ankle, etc.)*	What medicine or treatment was used? *(Check one)*		
				None	Prescription *(Name, if known)*	If other, what?

VISITED OR CALLED A DOCTOR, DENTIST, OPTOMETRIST, CHIROPRACTOR, ETC.

1. Page 7 asks for visits or calls to doctors, dentists, and any other health professionals. Please report all visits even if no one is ill. This would include routine check-ups, allergy shots, teeth cleaning, eye check-ups, as well as visits for illnesses.

2. If doctor gave advice on the phone and there was no visit, check "phone call."

SAMPLE

Date visited or called	Who in the family? *(First name)*	Name of doctor, dentist, etc.	Type of doctor *(Internist, optometrist, pediatrician, etc.)*	Type of visit or call *(Check one)*				Reason for visit or call *(Glasses, check-up, shots, illness, etc.)*
				Office visit	Phone call	Home visit	Other *(Specify)*	
Oct. 7	John	Donald O'Toole	General practice		✓			Flu
Oct. 12	John Jr	Steven Anast	Pediatrician				At hospital	Dislocated shoulder

VISITED OR CALLED A DOCTOR, DENTIST, OPTOMETRIST, CHIROPRACTOR, ETC.

Date visited or called	Who in the family? *(First name)*	Name of doctor, dentist, etc.	Type of doctor *(Internist, optometrist, pediatrician, etc.)*	Type of visit or call *(Check one)*				Reason for visit or call *(Glasses, check-up, shots, illness, etc.)*
				Office visit	Phone call	Home visit	Other *(Specify)*	

HOSPITAL, INCLUDING OUT-PATIENT CARE, CLINIC, OR NURSING HOME CARE

1. On page 9, which asks about hospital care, include all visits to a hospital or clinic for outpatient care and emergency room treatment, as well as overnight or longer stays.
2. If someone is still in the hospital at the end of the month, write "still there" in the column headed "Date ended."
3. Do not report on page 9 any doctor visits which have already been recorded on page 7.

SAMPLE

Date started	Date ended	Who in the family? *(First name)*	Name of hospital, nursing home, clinic, etc.	Type *(Check one)*			Reason *(Tests, pregnancy, operation, etc.)*
				Hospital or clinic			
				Out-patient	Overnight or longer	Nursing home	
Oct. 12	Oct. 13	John Jr.	St Francis Hospital		✓		X-rays

HOSPITAL, INCLUDING OUT-PATIENT CARE, CLINIC, OR NURSING HOME CARE

Date started	Date ended	Who in the family? *(First name)*	Name of hospital, nursing home, clinic, etc.	Type *(Check one)*			Reason *(Tests, pregnancy, operation, etc.)*
				Hospital or clinic			
				Out-patient	Overnight or longer	Nursing home	

MEDICINE, GLASSES, AND OTHER MEDICAL SUPPLIES OBTAINED

1. Page 11 asks that you report all of the medical supplies you obtained, whether or not you had a prescription.

2. Include such supplies as aspirin, cough medicine, heating pads, glasses, crutches, bandages, as well as all prescription drugs.

SAMPLE

Date obtained	For whom? *(First name)*	Prescription? *(Check one)*		What was obtained? *(Cough medicine, glasses, birth control pills, tranquilizers, etc.)*	Amount paid	Insurance coverage *(Check one)*			
		Yes	No			Not covered	Partly covered	Fully covered	Don't know if covered
Oct. 7	John		✓	Aspirin	$ .89	✓			
Oct. 12	John Jr.	✓		Plaster cast	$50.00		✓		
					$				

MEDICINE, GLASSES, AND OTHER MEDICAL SUPPLIES OBTAINED

Date obtained	For whom? *(First name)*	Prescription? *(Check one)*		What was obtained? *(Cough medicine, glasses, birth control pills, tranquilizers, etc.)*	Amount paid	Insurance coverage *(Check one)*			
		Yes	No			Not covered	Partly covered	Fully covered	Don't know if covered
					$				
					$				
					$				
					$				
					$				
					$				
					$				
					$				
					$				
					$				
					$				
					$				
					$				
					$				
					$				
					$				
					$				

PAYMENT OF DOCTOR, DENTIST, HOSPITAL AND NURSING HOME BILLS

1. On page 13 you are asked to report your payments of doctor and hospital bills at the time you pay for them, not when you got the service or the bill.
2. If the payment is covered by insurance and you do not ever pay any money yourself, you need not report them.
3. If you pay the bill and then the insurance company sends you the money, please report this.

SAMPLE

Date payment made	For whom? *(First name)*	Name of doctor, dentist, hospital, or nursing home	Date(s) service was given *(If known)*	Amount paid	Insurance coverage *(Check one)*			
					Not covered	Partly covered	Fully covered	Don't know if covered
Oct. 30	John Jr.	Steven Anast	Oct. 12	$ 20.00		✓		
Oct. 30	John Jr.	St. Francis Hospital	Oct. 12	$ 185.00			✓	
				$				

PAYMENT OF DOCTOR, DENTIST, HOSPITAL AND NURSING HOME BILLS

(EVEN IF ALL OR SOME OF PAYMENT WILL BE REFUNDED LATER BY INSURANCE)

Date payment made	For whom? *(First name)*	Name of doctor, dentist, hospital, or nursing home	Date(s) service was given *(If known)*	Amount paid	Insurance coverage *(Check one)*			
					Not covered	Partly covered	Fully covered	Don't know if covered
				$				
				$				
				$				
				$				
				$				
				$				
				$				
				$				
				$				
				$				

NOTES

Study #250

INITIAL INTERVIEW CODING INSTRUCTIONS

Purpose

The purpose of this study is to investigate the use of diaries and other methods for obtaining health care information. We want to determine which types of record keeping are the most efficient and accurate for gathering reports of health care needs. Reports like this are used by government agencies and health planning organizations to determine the medical needs of the people in the U.S. This interview is the third phase of an ongoing study about health care needs.

This particular phase of the study is concerned with obtaining information about each household's medical experience within the last month as well as more general background information.

The people in this sample were chosen from a telephone screening interview conducted in February. This interview is the first of a four-part series of interviews, with one interview done a month.

General Instructions

This questionnaire is precoded and precolumned, requiring mostly checking to make sure the correct items were circled and correct SKIP patterns followed. The information for a particular person runs down in the column directly below their name and continues on the next page. If more than six persons are living in a household, a second questionnaire should be attached by the interviewer which contains the rest of the household members.

Since these initial interviews were phone and personal, they can be sent back for corrections. If you find any inconsistencies or unclear information, fill out an error and verification form and attach it to the questionnaire, finish coding the entire questionnaire, and place it in the Return to Field pile.

Code '8' or '98' for don't know and '9' or '99' ONLY if the respondent refused to answer a particular question. Round even.

Specific Instructions

Check the box on the front page of the questionnaire. Make sure every item is filled out so it is identical to the IRF. Please note the 0 by the Init. Int. line should be changed to a 4. The line for Comp. may sometimes be blank. If any information is missing from the I.R.F., return to the supervisor for corrections. If there are two or more questionnaires per interview, make sure each box is filled out.

best copy available

Col.	Ques.	Instructions
15	1a.	For each name written in across the top of the page there should be a column of information underneath it. If not, fill out an error sheet and return to field for corrections. See List 1.
17,18	1b.	This is a two-column code so add a left zero if necessary.
20	2.	If 'Yes' is circled, go to Question 3. If 'No' or 'don't know', SKIP to Question 4a and Questions 3a-c are BLANK.
21,22	3a.	Number of days is a two-column code. Add a left zero if necessary. If 'don't know', SKIP to Question 3c; Question 3b is BLANK.
23,24	3b.	Two columns, add a left zero if necessary.
26,27	4a.	Two columns, add a left zero if necessary. If none, code '00' and SKIP to Question 5; Question 4b is BLANK.
28,29	4b.	Two columns, add a left zero if necessary.
33	8a.	If 'yes', answer Questions 8b & c. If 'no' or 'don't know', SKIP to Question 9, Questions 8b & 8c are BLANK.
34,35	8b.	Two columns, add a left zero if necessary.
36,37	8c.	Two columns, add a left zero if necessary.
38,39 40,41	9	The purpose of this question is to catch items that were missed by the first 8 questions. Try to recode this (ese) response back into the previous categories if at all possible. So, a woman who 'got her dentures fixed' would be put as one more visit to a health professional, Question 4a. If you need help in interpreting an answer, please ask the supervisor (Kathy). If the number of times is not clear (son gets x-rays all the time for football injuries), code '96' in the appropriate number category. In this case the '96' should go in Question 4a. At all times, the columns for Question 9 should be BLANK.

NOTE:::: Only one of the last pages should be filled out--Page 5 if it was a personal interview, Page 6 if it was a phone interview. This information appears in the box on the front page, so compare and make sure the correct page is filled out.

Col.	Ques.	Instructions
46,47	13.	Two columns, add a left zero if necessary. This number should agree with the number of names across the page. If not, return to the supervisor.
48-50		Put your Coder I.D. # here.
51-53		Put your Check-coder I.D. # here.

LIST I

15	Every Person	Code as follows: 1. Head 2. Spouse of head 3. Son 4. Daughter 5. Father 6. Mother 7. Other 8. Not related 9. Can't determine

Study #250

FACE-TO-FACE AND TELEPHONE PANEL EDITING INSTRUCTIONS

All editing is to be done in red ink on the personal and telephone interviews. Questions needing editing on the top part of the questionnaire are:

Quest. 5c, pp. 2-3

Quest. 7c, pp. 4-5

Use the "Short index of diseases, injuries, and impairments."

The bottom part (charts) needs editing on:

Chart 1 - reason for visit or call - p. 7

Chart 2 - reason for medical care - p. 9

For Charts 1 and 2, use "reason for visit" list.

Chart 3 - what was obtained? - p. 10

For Chart 3, use "Drugs Index."

Also check pp. 16-20 where extra incidents are cited. Edit like the part of the questionnaire it comes from.

Put your initials on the lower right hand corner of each questionnaire you edit.

Questions 8b, 9b

Reason for medical visit/care

1. acute illness (accidents, infections, injuries)
2. chronic illness (allergy shot, emphysema, diabetes)
3. check-ups (physical, eye, dental, pre-natal)
4. tooth cleaning
5. therapy (mental and physical)
6. consultation/appointment
7. not specific enough to code
8. don't know
9. no answer

Study #250

DIARY EDITING INSTRUCTIONS

All editing is to be done in red ink.

Questions needing editing are:

"Why did they stay home?" Page 3
"Why did they feel ill?" Page 5

Use the "Short index of diseases, injuries, and impairments."

"Reason for visit or call" Page 7
"Reason" Page 9

Use the "reason for visit" list.

"What was obtained?" Page 11

Use the "Drugs Index."

Disease Codes

Our list of disease codes is based on the Health Interview Survey's "Short Index, Diseases, Injuries, Impairments" developed by the National Center for Health Statistics. We have simplified that coding scheme by omitting decimal points.

For your convenience, the most common codes are listed below:

Cold, sore throat	4650
Flu	4700
Headache, tension	3068
Backache	7287
Arthritis, "not crippling," NEC	7151
Pain (except arthritis and backache)	7871
Indigestion	5369
Injury, NEC	9960

When you come across a disease, injury, or impairment that is not included in this brief list, check the 31-page list of codes, which is arranged in alphabetic order. Also, be sure to check the Additions to Disease List and the Operations listing before consulting the coding supervisor.

(The complete list of disease codes has not been included here but is available from the Survey Research Laboratory upon request.)

Drugs Index

To code drugs, we are using *AMA Drug Evaluations*. Find the drug in the index of *Evaluations*. The index will refer you to a chapter in which the drug is described. We are using the chapter numbers as our code numbers.

Some newly developed drugs are not included in *Evaluations*. To code these drugs we are using the latest edition of *Physician's Desk Reference*. Look the drug up in the product name index and locate its full description in the text. Usually this description will be sufficient to allow you to place the drug into one of the categories listed below. However, if you have any questions, refer them to the coding supervisor.

I. CARDIOVASCULAR-RENAL AGENTS

Digitalis Glycosides	01
Antiarrhythmic Agents	02
Antianginal Agents	03
Peripheral Vasodilators	04
Agents Used in Hypotension and Shock	05
Antihypertensive Agents	06
Diuretics	07

II. AGENTS AFFECTING BLOOD FORMATION, VOLUME, AND COAGULABILITY

Agents Used to Treat Deficiency Anemias	08
Anticoagulants	09
Blood, Blood Components, and Blood Substitutes	10
Hemostatics	11

III. HOMEOSTATIC AND NUTRIENT AGENTS

Agents Used to Treat Hyperglycemia	12
Agents Used to Treat Hyperlipidemia	13
Vitamins and Sources of Vitamins	14
Miscellaneous Nutritional Agents	15
Replenishers and Regulators of Water, Electrolytes, and Nutrients	16
Blood Calcium Regulators	17

IV. DRUGS USED IN ANESTHESIA

Local Anesthetics	18
General Anesthetics	19
Adjuncts to Anesthesia	20

V. ANALGESICS, NARCOTIC ANTAGONISTS, AND AGENTS USED TO TREAT SPECIFIC PAINFUL DISORDERS

Strong Analgesics . . . 21
Mild Analgesics . . . 22
Narcotic Antagonists . . . 23
Agents Used to Treat Migraine . . . 24
Agents Used in Gout . . . 25
Antirheumatic Agents . . . 26

VI. DRUGS AFFECTING THE CENTRAL NERVOUS SYSTEM

Sedatives and Hypnotics. . . . 27
Antianxiety Agents . . . 28
Antipsychotic Agents . . . 29
Centrally Acting Skeletal Muscle Relaxants . . . 30
Anticonvulsants . . . 31
Antidepressants . . . 32
Anorexiants . . . 33
Analeptics . . . 34

VII. HORMONES AND AGENTS AFFECTING HORMONAL MECHANISMS

Adrenal Corticosteroids . . . 35
Androgens and Anabolic Steroids . . . 36
Estrogens, Progestagens, Oral Contraceptives, and Ovulatory Agents . . . 37
Anterior Pituitary and Hypothalamic Hormones . . . 38
Thyroid Hormones and Antithyroid Agents . . . 39
Antidiuretics . . . 40

VIII. DRUGS USED IN RESPIRATORY AND ALLERGIC DISSORDERS

Bronchodilators . . . 41
Nasal Decongestants . . . 42
Expectorants and Inhalants . . . 43
Antitussive Agents . . . 44
Antihistamines . . . 45
Cold Remedies . . . 46
Therapeutic Gases . . . 47

IX. ANTIMICROBIAL AGENTS

Penicillins . . . 48
Cephalosporins . . . 49
Erythromycin and Derivatives . . . 50
Lincomycin and Clindamycin . . . 51
Polymixins . . . 52
Tetracyclines . . . 53
Chloramphenicol and Derivatives . . . 54

Sulfonamides 55
Nitrofurans 56
Aminoglycoside Antibacterial Agents and Miscellaneous Antimicrobial Drugs 57
Antituberculous Agents 58
Antileprosy Agents 59
Antifungal Agents 60

X. PARASITICIDAL AGENTS

Antimalarial Agents 61
Amebicides 62
Antitrypanosomal Agents 63
Antitrichomonal Agents 64
Anthelmintics 65
Scabicides and Pediculicides 66

XI. AGENTS APPLIED LOCALLY

Antiseptics and Disinfectants 67
Dermatologic Agents 68

XII. DRUGS USED IN OPHTHALMOLOGY

Agents Used to Treat Glaucoma 69
Mydriatics and Cycloplegics 70
Anti-infective and Anti-inflammatory Agents Used in Ophthalmology . . . 71
Miscellaneous Ophthalmic Preparations 72

XIII. OTOLOGIC AGENTS

Topical Otic Preparations 73

XIV. DRUGS USED IN NEUROMUSCULAR DISORDERS

Antiparkinsonism Agents 74
Agents Used in Myasthenia Gravis 75

XV. DIAGNOSTIC AGENTS

Radiopaque Media 76
Miscellaneous Diagnostic Aids 77

XVI. GASTROINTESTINAL AGENTS

Antispasmodics	78
Antacids	79
Antidiarrheals	80
Laxatives and Agents Affecting Fecal Consistency	81
Anorectal Preparations	82
Miscellaneous Gastrointestinal Agents	83
Emetics	84
Antiemetics	85

XVII. SMOOTH MUSCLE STIMULANTS

Stimulants of Gastrointestinal and Urinary Tracts	86
Oxytocics	87

XVIII. ONCOLYTIC AGENTS

Antineoplastic Agents	88

XIX. IMMUNOLOGIC AGENTS

Vaccines, Toxoids, and Serologic Agents	89

XX. HEAVY METAL ANTAGONISTS, ENZYMES, AND MISCELLANEOUS AGENTS

Chelating Agents	90
Enzymes Used as Drugs	91
Miscellaneous Drugs	92

Needles and syringes, any other "applicator/prescription" type items	93
Eyeglasses, contact lenses	94
Hearing aids	95
Nonprescription medical supplies taken internally (pills, capsules, lozenges, etc.)	96
Nonprescription medical supplies used externally (bandages, ointments, heating pads, canes, etc.)	97
Not specific enough to code	98
No answer, don't know	99

STUDY #250

FACE-TO-FACE AND TELEPHONE PANEL CODING INSTRUCTIONS

General Information - This is the final part of an ongoing study on the methods of collecting health data. There were three methods of data collection following an initial interview by phone or in person. One was another phone interview repeated monthly for three months. A second method of data collection was a personal interview with the same household repeated monthly for three months. Both of these data collection methods used the same questionnaire, the one we are coding now. Two other data collection methods were also employed, both of them using a diary questionnaire form to collect the data.

The questionnaires have had the initial interview, plus any Month 1, 2, or 3 followup interviews bundled together. It is important that they be kept together in their bundles at all times, so when you have finished coding a set, please replace the rubber band around it.

Due to a decision by the study sponsor, Prof. Seymour Sudman, the questionnaires no longer have the correct columning, so they must be coded onto code sheets. Code sheets require very careful coding. It is very important to have the correct column before and during the coding procedure. Each of you has been provided with a blank questionnaire with the correct columns marked in red ink. Use this copy at all times when coding. If you misplace or lose it, please ask for another.

The questionnaire is divided into two main parts: the first part has information for each household member in vertical columns; the second part has specific information about health professional visits and medical supply purchases in horizontal columns (charts). To make it easier for both Data Reduction and Data Processing sections, the decision was made to code and clean each section separately. What this means to you is that you will code the vertical information first on your code sheet, followed by any horizontal chart information.

One code sheet should be used for each month. If a particular month has more data than the code sheet has lines, use a second code sheet for the remaining data and staple them together. Each codesheet should also be labeled with Month 1, 2, or 3 written clearly on top. When you have finished coding a set of questionnaires, place each code sheet inside each month and put the whole set in the "To Be Check-coded" pile.

Point to remember: the initial interview has already been coded. It was included with the set of questionnaires for a very important reason--for the questionnaires to be analyzed properly, the data for each household member must be in the same place for each of the three months. This place has already been determined by how each person was cited in the initial interview. Each person's information is a separate deck. Before beginning to code, check each of the questionnaires with the initial and make sure each household member is in the same place. If not, be sure and code them like the initial. EXAMPLE: The initial lists John, Mary and Sue as household members. Monthly 1-3 lists Mary, John and Sue. You will code Mary's information in deck 02 and John's information in deck 01 for Months 1-3.

If a person no longer appears on a particular month (i.e., died, moved out, etc.), that deck will be left blank for each month the person does not appear. If a new person appears, he/she will be coded after all other household members.

Remember: When in doubt, ask your study supervisor (Kathy) or the code leader (Leila). If no one is around, attach a note to the questionnaire giving you trouble, and put the whole set of questionnaires on the "Problem" pile. One of us will try to answer your question(s) as soon as possible, and tell you what was done.

Since the questionnaire is treated like two separate questionnaires, you may have two deck 01's, two deck 02's, two deck 03's, etc. You will ALWAYS have two deck 01's. Even if no information is listed in the charts, a code will be used to indicate this.

In general, code 9's or multiples of, for missing or refused information. Code 8's or 98's for don't know.

Specific Instructions

Column Deck 01	Question	Code
1-5		HU Seq #
6		Not coded, leave blank
7-9		Interviewer I.D.#. If none is written, take the I.D.# from the initial interview.
10		Month 1, 2, or 3
11		Indicates whether top or bottom 1 = Top
12		Indicates Respondent 1 = respondent 2 = others (The first name is not always the Respondent, check carefully).
13		Sex 1. Male, 2. female, 9's are not allowed.
14-15		Age, two digit, add left zero if necessary.
16	3	1 work, 2 school, 3 home
17	4	1. yes 2. no 8. don't know } (Skip to Col. 28)

Column	Question	Code
18,19	5a	# days, two digit, add left zero if necessary 98.Don't know (Skip to Col. 22-25)
20,21	5b	Bed days, two digit, add left zero if necessary
22-25	5c	Illness has been already edited in red ink. Use four digit number. If not edited, give to the supervisor.
26	5d	What taken? 1. medicine 2. other treatment (Skip to Col. 28) 3. both 4. no (Skip to Col. 28)
27	5e	Prescription? 1. yes 2. no
28	6	Did activities anyway? 1. yes 2. no (Skip to Col. 37) 8. don't know
29,30	7a	#days, two digit, add left zero if necessary
31-34	7b	Illness--should be edited in red ink
35	7c	What taken? 1. medicine 2. other treatment (Skip to Col. 37) 3. both 4. no (Skip to Col. 37)
36	7d	Prescription? 1. yes 2. no
37	8a	Visit health professional? 1. yes 2. no 8. don't know } (Skip to Col. 39)
38	8b	# visits or calls, one digit 7. seven or more visits
39	9a	Institutional care received? 1. yes 2. no 8. don't know } (Skip to Col. 41)
40	9b	# times, one digit 7. seven or more

Column	Question	Code
41	10	Medical supplies obtained? 1. yes 2. no 8. don't know
42	11	Medical provider payments? 1. yes 2. no 8. don't know
43	12	Organization payments? 1. yes 2. no 8. don't know
44,45	13	# people in household, two digit, add left zero if necessary
46-64		BLANK
65-67		Coder's ID#
68-70		Check-coder's ID#
71-73		Keypuncher ID#
74,75		Deck # - 01
76-78		Study # - 250
79,80		Person # - 01
DECK 02		
1-10		DUP
11		1
12		2 if not respondent
13		Sex 1. Male, 2. female, 9's are not allowed.
14-15		Age, two digit, add left zero if necessary.
16	3	1 work, 2 school, 3 home
17	4	1. yes 2. no 8. don't know } (Skip to Col. 28)

Column	Question	Code
18,19	5a	# days, two digit, add left zero if necessary 98. Don't know (Skip to Col. 22-25)
20,21	5b	Bed days, two digit, add left zero if necessary
22-25	5c	Illness has been already edited in red ink. Use four digit number. If not edited, give to the supervisor.
26	5d	What taken ? 1. medicine 2. other treatment (Skip to Col. 28) 3. both 4. no (Skip to Col. 28)
27	5e	Prescription? 1. yes 2. no
28	6	Did activities anyway? 1. yes 2. no (Skip to Col. 37) 8. don't know
29,30	7a	#days, two digit, add left zero if necessary
31-34	7b	Illness--should be edited in red ink
35	7c	What taken ? 1. medicine 2. other treatment (Skip to Col. 37) 3. both 4. no (Skip to Col. 37)
36	7d	Prescription? 1. yes 2. no
37	8a	Visit health professional? 1. yes 2. no 8. don't know } (Skip to Col. 39)
38	8b	# visits or calls, one digit 7. seven or more visits
39	9a	Institutional care received? 1. yes 2. no 8. don't know } (Skip to Col. 41)
40	9b	# times, one digit 7. seven or more

Column	Question	Code
41	10	Medical supplies obtained? 1. yes 2. no 8. don't know
42	11	Medical provider payments? 1. yes 2. no 8. don't know
43	12	Organization payments? 1. yes 2. no 8. don't know
44-73		BLANK
74,75		Deck # - 02
76-78		Study # - 250
79,80		Person # - 02

NOTE: All decks after deck 01 are to be coded using the instructions for deck 02. If more than one booklet was used, please remember the decks in the second booklet are decks 07-12.

SECOND PART OF QUESTIONNAIRE

There is always a deck 01 for the bottom part of the questionnaire. If no data appears on any of the charts, code as follows:

Column	Code
1-10	DUP
11	2. indicates bottom part of questionnaire
12	2. indicates no data, and no additional decks
13-17	BLANK
18-19	Number of decks in second part of questionnaire
20-71	BLANK
72,73	# people in household, two digit, and left zero if necessary
74,75	Deck # (01)
76-78	Study #250
79,80	Person #00

If there are any data in the chart, you will have a deck 01 (if the data are not on the first chart) and a deck where the data appear. Each line on the charts equals a deck.

Chart 1 = decks 01-12

Chart 2 = decks 13-24

Chart 3 = decks 25-38

Chart 4 = decks 39-52

Chart 5 = decks 53-66

Chart 1 - visit or phone call

Column	Code
1-10	DUP
11	2. indicates bottom part of questionnaire
12	1. indicates there are data in the chart
13,14	Type of doctor, two digit, see List 1
15	How contacted? 1. office visit 2. phone 3. home visit 4. other
16	Reason for visit--has already been edited in red ink, copy down the number.
17	BLANK
18,19	Number of decks in second part of questionnaire
20-71	BLANK

If no data appear on this particular chart, but on another, Person # equals 00.

72,73	# people in the household, two digit, add left zero if necessary
74,75	Deck # - 01
76-78	Study # - 250
79,80	Person #.

If more than one visit is cited, the next visit will be deck 02; the next, deck 03, etc.

Chart 2 - contact at a medical organization

Column	Code
1-10	DUP
11	2. indicates bottom of questionnaire
12	BLANK
13	Type of organization, 1 column, see List 2.
14	Overnight or longer? 1. yes 2. no
15	Reason for care--has already been edited in red ink, copy down the number.
16-73	BLANK
74,75	Deck # - 13
76-78	Study # - 250
79,80	Person #

Chart 3 - medical supplies obtained

Column	Code
1-10	DUP
11	2. indicates bottom part of questionnaire
12	BLANK
13,14	What was obtained--has already been edited in red ink, copy down the number.
15	Doctor's prescription? 1. yes 2. no
16-19	Date obtained, 4 digits--2 for month, 2 for day. If unclear (last week, last Friday, etc.), code '9898'.
20-24	Cost of item, 5 digits, round exact EXAMPLES: $4.59 = 00459, $12.00 = 01200, $168.76 = 16876, $.62 = 00062, If over $999.97, code '99997'.

Column	Code
25	Covered by insurance? 1. not covered 2. partially covered 3. fully covered 8. don't know coverage
26-73	BLANK
74,75	Deck # - 25
76-78	Study # - 250
79,80	Person #
	90. Supplies and medicine for household.
	91. Supplies and medicine for children only.
	92. Supplies and medicine for adults only.

Chart 4 - medical provider payments

Column	Code
1-10	DUP
11	2. indicates bottom of questionnaire
12	BLANK
13-16	Date payment made, 4 digits--2 for month, 2 for day. If unclear, code '9898'.
17-21	Amount paid, 5 digits, round exact
22	Covered by insurance? 1. not covered 2. partially covered 3. fully covered 8. don't know coverage
23-73	BLANK
74,75	Deck # - 39
76-78	Study # 250
79,80	Person #

Chart 5 - organization payments

1-10	DUP
11	2. indicates bottom of questionnaire
12	BLANK
13-16	Date payment made, 4 digits--2 for month, 2 for day. If unclear, code '9898'.
17-21	Amount paid, 5 digits, round exact.
22	Covered by insurance? 1. not covered 2. partially covered 3. fully covered 8. don't know coverage
23-73	BLANK
74,75	Deck # - 53
76-78	Study # 250
79,80	Person #

If the household members had more than one instance of feeling sick and staying home from work or school (Quest. 5c-e), the extra incidents are on pages 16-17, decks 67-76.

Column	Code
1-10	DUP
11	2. This will be part of the bottom data
12	BLANK
13-16	Illness or injury--has been edited in red ink, copy down the number.
17	Any treatment? 1. medicine 2. other treatment (Col.18 is blank) 3. both 4. no (Col. 18 is blank)
18	Doctor's prescription? 1. yes 2. no
19-73	BLANK
74,75	Deck # - 67
76-78	Study # - 250
79,80	Person #

If the household members had more than one instance of feeling ill but went to work or school anyway (Quest. 7c-e), the extra incidents are on pages 18-19, decks 77-86.

Column	Code
1-10	DUP
11	2. This will be part of the bottom data
12	BLANK
13-16	Illness or injury--has been edited in red ink, copy down the number.
17	Any treatment? 1. medicine 2. other treatment (Col.18 is blank) 3. both 4. no (Col. 18 is blank)
18	Doctor's prescription? 1. yes 2. no
19-73	BLANK
74,75	Deck # - 77
76-78	Study # - 250
79,80	Person #

If the household members purchased more medical supplies than there is room for on Chart 3, the extra supplies are on pages 20-21, decks 87-99.

Column	Code
1-10	DUP
11	2. this will be part of the bottom data
12	BLANK
13,14	What was obtained--has been edited in red ink, copy down the number.
15	Doctor's prescription? 1. yes 2. no

Column	Code
16-19	Date obtained, 4 digits--2 for month, 2 for day. If unclear, code '9898'.
20-24	Cost, 5 digits, round exact.
25	Covered by insurance? 1. not covered 2. partially covered 3. fully covered 8. don't know coverage
26-73	BLANK
74,75	Deck # - 87
76-78	Study # 250
79-80	Person #

Addition to
Study #250 Coding Instructions

For a deceased person who is in Deck 01:

Leave the columns pertaining to that person's information blank.

The columns will be:

1-10	DUP
11/1	
12-43	BLANK
44,45	# persons currently in household
46-64	BLANK
65-67	Coder I.D.
68-70	Check-coder I.D.
71-73	Keypuncher I.D.
74,75	Deck # - 01
76-78	250
79,80	BLANK - no person #.

LIST 1

TYPES OF DOCTORS

*Codes 01-49 are physicians

01. General Practitioner

02. Anesthesiologist--a specialist in anesthetics

03. Dermatologist--treats diseases of the skin

04. Internist--treats diseases of the internal organs

05. Neurologist--treats diseases of the nervous system

06. Obstetrician and Gynecologist--treats pregnant women/diseases of the genital tract

07. Opthalmologist--knowledge of eye and its disorders

08. Orthopedist--surgeon of the skeletal system

09. Osteopath

10. Otolaryngologist--ear, nose and throat specialist

11. Pathologist--an expert in organ and tissue change caused by disease

12. Pediatrician--treats the child in its development and diseases

13. Proctologist--treats the rectum and its diseases

14. Psychiatrist--deals with disorders of the mind

15. Radiologist--uses radiant energy (x-ray) to diagnose and treat diseases

16. Surgeon--deals with diseases and conditions requiring operative procedures (if specialist is given with surgeon code to specialist)

17. Oral surgeon--maxillofacial surgery

18. Syphilogist--treats syphilis

19. Urologist--treats and operates on disorders of the genito-urinary system

20. Other Specialist

28. Specialist Don't Know Kind

*Codes 50-89 are non-physicians

50. Chiropractor

51. Dentist, Orthodontist

52. Optometrist (eyes)
53. Podiatrist and/or Chiropodist (feet)
54. Psychologist--social psychologist (mental health)
55. Technicians--nurses, therapists
56. Other non-physicians
98. Don't know type

LIST 2

INSTITUTION

1. Hospital
2. Clinic
3. Nursing home
4. County Health Department
5. Military base facility
7. Can't determine type
8. Don't know
9. No answer

Study #250

DIARY CODING INSTRUCTIONS

General Information - The final data collection methods for this study used diary forms. In one method, an interviewer dropped off a diary and picked it up at the end of the month, reviewing what had been entered in the diary with the respondent. These diaries will have a pink sheet included with them. This sheet was filled out by the interviewer as she/he picked up the diary. The other method was giving a diary to the respondent after the initial interview, with instructions to mail it to us in 30 days; and we would mail the respondent new diaries. Both diary forms are identical, so these instructions apply to each.

The diaries need to be coded on code sheets. You have been provided with a blank diary with the correct columns marked in red ink. Use this copy at all times when coding.

Use one code sheet for each month. Label clearly at top Month 1, etc. When you have finished coding a set of questionnaires, place each code sheet inside each month and put the whole set in the "To Be Check-Coded" pile.

Remember the initial interview has been already coded. It was included with the set of diaries so the data for each questionnaire could be analyzed properly. In order to do this, each household member is given a number according to how they appear on the initial. Each line on the diary equals one deck. That person who was cited will be given a person number according to the order the household composition was listed in the initial interview.

Specific Instructions

Column	Page	Code
Deck 01		
1-5		Household number
6-9		Not coded, leave blank
10		Month 1, 2 or 3
11	3	1. indicates information for the month 2. indicates no information for the month, diary is blank.
12-15	3	Date first stayed home, 4 digit--2 for month, 2 for day. If unclear or blank, code '9898'.
16-19	3	Date resumed usual activities, 4 digit--2 for month, 2 for day. If unclear or blank, code '9898'.

20-23	3	Illness has already been edited in red ink. Use four digit number. If not edited, give to the supervisor.
24	3	Stay in bed all or part of day? 1. yes 2. no
25	3	What taken? 1. medicine 2. other treatment 3. both 4. none taken
26	3	Doctor's prescription? 1. yes 2. no
27	3	Number of checks by interviewer BLANK = mail diary 0. no checks 1. one check 2. two checks 3. three checks 4. four checks 5. five checks 6. six checks 7. seven checks 8. eight checks
28-62	3	BLANK
63,64	3	Number of decks diary has
65-67	3	Coder I.D.
68-70	3	Check-Coder I.D.
71-73	3	Keypuncher I.D.
74,75	3	Deck # (01)
76-78	3	Study 250
79,80	3	Person # from initial interview

NOTE: Decks 02-16 on Page 3 will be coded as follows:

1-10	3	DUP
11	3	BLANK
12-15	3	Date first stayed home, 4 digit--2 for month, 2 for day. If unclear or blank, code '9898'.
16-19	3	Date resumed usual activities, 4 digit--2 for month, 2 for day. If unclear or blank, code '9898'.

20-23	3	Illness has already been edited in red ink. Use four digit number. If not edited, give to the supervisor.
24	3	Stay in bed all or part of day? 1. yes 2. no
25	3	What taken? 1. medicine 2. other treatment 3. both 4. none taken
26	3	Doctor's prescription? 1. yes 2. no
27	3	Number of checks by interviewer BLANK = mail diary 0. no checks 1. one check 2. two checks 3. three checks 4. four checks 5. five checks 6. six checks 7. seven checks 8. eight checks
28 - 73		BLANK
74,75		Deck # (02-16)
76-78		Study 250
79,80		Person # from initial interview

NOTE: Decks 17-32 are coded as follows:

1-10	5	DUP
11	5	BLANK
12-15	5.	Date first felt ill, 4 digits--2 for month, 2 for day. If unclear or blank, code '9898'.
16-19	5	Date felt better or got sicker, 4 digit--2 for month, 2 for day. If unclear or blank, code '9898'.

20-23	5	Illness has already been edited in red ink. Use four digit number. If not edited, give to the supervisor.
24	5	What taken? 1. medicine 2. other treatment 3. both 4. none taken
25	5	Doctor's prescription? 1. yes 2. no
26	5	Number of checks by interviewer BLANK = mail diary 0. no checks 1. one check 2. two checks 3. three checks 4. four checks 5. five checks 6. six checks 7. seven checks 8. eight checks
27-73	5	BLANK
74,75	5	Deck # (17-32)
76-78	5	Study 250
79,80	5	Person # from initial interview

NOTE: Decks 33-49 are coded as follows:

1-10	7	DUP
11	7	BLANK
12-15	7	Date visited or called, 4 digit--2 for month, 2 for day. If unclear or blank, code '9898'.
16,17	7	Type of doctor, two digit, see List 1.
18	7	Type of visit 1. office visit 2. phone call 3. home visit 4. other
19	7	Reason for visit has already been edited in red ink; copy down the number.

20	7	Number of checks by interviewer BLANK = mail diary 0. no checks 1. one check 2. two checks 3. three checks 4. four checks 5. five checks 6. six checks 7. seven checks 8. eight checks
21-73	7	BLANK
74,75	7	Deck # (33-49)
76-78	7	Study 250
79,80	7	Person # from initial interview
	NOTE:	Decks 50-65 are coded as follows:
1-10	9	DUP
11	9	BLANK
12-15	9	Date started, 4 digit--2 month, 2 for day If unclear or blank, code '9898'.
16-19	9	Date ended, 4 digit--2 for month, 2 for day. If unclear or blank, code '9898'.
20	9	Type of organization, 1 column, see List 2.
21	9	1. outpatient 2. overnight or longer
22	9	Reason for care--has already been edited in red ink.
23	9	Number of checks by interviewer BLANK = mail diary 0. no checks 1. one check 2. two checks 3. three checks 4. four checks 5. five checks 6. six checks 7. seven checks 8. eight checks
24-73	9	BLANK
74,75	9	Deck # (50-65)
76-78	9	Study 250
79,80	9	Person # from initial interview

NOTE: Decks 66-82 are coded as follows:

1-10	11	DUP
11	11	BLANK
12-15	11	Date obtained, 4 digit--2 for month, 2 for day. If unclear or blank, code '9898'.
16	11	Doctor's prescription? 1. yes 2. no
17,18	11	What was obtained--has already been edited in red ink
19-23	11	Amount paid, 5 digit, add left zeroes when necessary. Examples: $3.98 = 00398, $134 = 13400, $.50 = 00050. If over $999.97, code '99997'.
24	11	Insurance coverage 1. not covered 2. partly covered 3. fully covered 8. don't know if covered
25	11	Number of checks by interviewer BLANK = mail diary 0. no checks 1. one check 2. two checks 3. three checks 4. four checks 5. five checks 6. six checks 7. seven checks 8. eight checks
26-73	11	BLANK
74,75	11	Deck # (66-82)
76-78	11	Study 250
79,80	11	Person # from initial interview. Also code 90. for entire household 91. for children only 92. for adults only

NOTE: Decks 83-92 are coded as follows:

1-10	13	DUP
11	13	BLANK

12-15	13	Date payment made, 4 digit--2 for month, 2 for day. If unclear or blank, code '9898'.
16	13	Type of organization 1. doctor 2. organization
17-20	13	Date service given, 4 digit--2 for month, 2 for day. If unclear or blank code '9898'.
21-25	13	Amount paid, 5 digit
26	13	Insurance coverage 1. not covered 2. partly covered 3. fully covered 8. don't know if covered
27	13	Number of checks by interviewer BLANK = mail diary 0. no checks 1. one check 2. two checks 3. three checks 4. four checks 5. five checks 6. six checks 7. seven checks 8. eight checks
28-73	13	BLANK
74,75	13	Deck # (83-92)
76-78	13	Study 250
79,80	13	Person # from initial interview. Also code: 90. for entire household 91. for children only 92. for adults only

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06. Obstetrician and Gynecologist--treats pregnant women/diseases of the genital tract

07. Opthalmologist--knowledge of eye and its disorders

08. Orthopedist--surgeon of the skeletal system

09. Osteopath

10. Otolaryngologist--ear, nose and throat specialist

11. Pathologist--an expert in organ and tissue change caused by disease

12. Pediatrician--treats the child in its development and diseases

13. Proctologist--treats the rectum and its diseases

14. Psychiatrist--deals with disorders of the mind

15. Radiologist--uses radiant energy (x-ray) to diagnose and treat diseases

16. Surgeon--deals with diseases and conditions requiring operative procedures (if specialist is given with surgeon code to specialist)

17. Oral surgeon--maxillofacial surgery

18. Syphilogist--treats syphilis

19. Urologist--treats and operates on disorders of the genito-urinary system

20. Other Specialist

28. Specialist Don't Know Kind

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51. Dentist, Orthodontist

52. Optometrist (eyes)

53. Podiatrist and/or Chiropodist (feet)

54. Psychologist--social psychologist (mental health)

55. Technicians--nurses, therapists

56. Other non-physicians

98. Don't know type

LIST 2

INSTITUTION

1. Hospital
2. Clinic
3. Nursing home
4. County Health Department
5. Military base facility
7. Can't determine type
8. Don't know
9. No answer

THE COST-EFFECTIVENESS OF USING THE DIARY AS AN INSTRUMENT FOR COLLECTING HEALTH DATA IN HOUSEHOLD SURVEYS

Seymour Sudman

Wallace Wilson

Robert Ferber

A Report

to

Bureau of Health Services Research and Evaluation

Health Resources Administration

Public Health Service

Department of Health, Education, and Welfare

Survey Research Laboratory

University of Illinois

Urbana, Illinois

June 1976

(Revised)

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1. INTRODUCTION AND SUMMARY OF RESULTS

The importance of reliable national statistics on the incidence of illnesses and the use of and expenditures for health care has led to the establishment of the Health Interview Survey, which is an integral part of the program of the National Center for Health Statistics (17, 24, 28), and to continuing studies by the Bureau of Health Services Research and Evaluation, a unit of the Health Resources Administration. These surveys have proved of great importance and have provided much valuable data. However, they have also run into problems that continue to defy solution. A major problem is that these surveys depend on recall for periods of up to a year, even though it is known that substantial recall errors may occur (16, 18-23, 25-27, 29). These errors are basically of two types:

1. Omissions.--The respondent omits an illness episode or expenditure entirely. These omissions are not random, but are usually concentrated among short illnesses for which hospitalization was not required, or for routine visits to a physician.
2. Telescoping.--The episode is remembered, but there is an error in the date so that the episode is remembered as occurring more recently than it did.

A second problem with surveys is that they are very expensive, since substantial detail is required from those who have been most ill. An alternative procedure that may help to solve or reduce some of the problems of surveys is the use of diaries to obtain health care information. Diaries eliminate the recall problem, as well as reduce interviewing costs. Diaries may present new problems, however, including level of cooperation, errors in record keeping, and possible conditioning effects. Yet, the diary approach has proven very valuable in other types of surveys, and the possibility that diaries may be equally useful in obtaining health information is sufficiently great to warrant their testing in some controlled experiments. (See 1-4 and 6-13. More extensive bibliographies are found in 8 and 11.)

Purpose of Research

Accordingly, the Survey Research Laboratory of the University of Illinois conducted an experimental study from October, 1973, through March, 1974, to investigate the use of diaries to obtain health care information. Of the many areas that needed to be studied, the following two appeared to be the most critical:

1. What should be the format for a medical diary?--In other uses of diaries to obtain information on consumer expenditures, both journal and ledger diaries have been used. In journal diaries, the entries are made in time sequence, while in ledger diaries they are made by categories of events, such as visits to the doctor, absences from work, purchases of medicines, etc. For consumer expenditure studies, the work of Sudman and Ferber (12) has shown that ledger diaries obtain more complete information and a higher level of reporting, but these results may not apply to medical events.

2. Should households be compensated for keeping records?--Again the results of Sudman and Ferber (12), as well as those of commercial panel operators, suggest that cooperation is improved if families are compensated for their diary keeping. These results are for expenditure diaries, where more work is required than for medical diaries, and may not hold for the easier medical diaries. Obviously, compensation affects the cost-effectiveness of diary procedures.

Organization of Report

The first chapter of this report focuses on a description of the study and a summary of the principal results. The second chapter discusses household cooperation, and the third chapter provides a comparison of the levels and accuracy of the various data-collection procedures. The costs of the various methods are given in the fourth chapter so that it is possible to make judgments of cost-effectiveness. The report concludes with a discussion of and recommendations based on the implications of these results.

Sample Design

A major problem with any methodological study of the effects of different survey techniques on the accuracy of reported behavior is to determine which procedure is more accurate if differences are observed. In the absence of validation information, it is usually assumed that accuracy is related to level of reporting. The higher the level, the greater the accuracy. Yet telescoping effects may increase the level of reporting while decreasing the accuracy.

For this reason, it was decided to select the sample for this study so that the reported results could be validated. This was accomplished by choosing respondents from the membership of two prepaid health maintenance organizations (HMOs). With the consent of these plans and the respondents in the sample, it would then be possible to validate all medical events that resulted in a visit to an HMO physician or to a clinic or hospital for outpatient or overnight care.

Note that even with this design many medical episodes cannot be validated, such as the less serious events that do not require a trip to the doctor and visits to physicians, dentists, and other providers not covered by the plans. It must be assumed that if a procedure produces more accurate data on events that can be validated, it should also do better or at least as well on data that cannot be validated.

A serious sample bias may result from using participants in HMOs. These respondents may be more concerned with health and medical problems than the average person and thus may be more willing to cooperate on medical surveys and to report more completely. This bias affects all the data-collection methods used in this study, but should not distort comparisons between methods.

To indicate the differences between the sample in this study and a national sample of U.S. households, Table 1.1 compares the characteristics of sample households with those of the total U.S. population. It may be seen that for each of the variables there are important biases in the current sample. The sample is younger than average, with only about 5 percent of household heads over age 65, compared to about 20 percent in the total population. This is because persons over 65 are generally retired

TABLE 1.1

DEMOGRAPHIC CHARACTERISTICS OF SAMPLE RESPONDENTS AND TOTAL U.S. POPULATION

Characteristic	Sample	U.S. population 1973[a]
Age of head:		
Under 25	8.9	8.4
25-34	21.8	20.5
35-44	19.2	16.8
45-54	25.7	18.5
55-64	19.7	16.0
65 and over	4.7	19.9
Total	100.0	100.1
Median age	44.0	47.3
Household size:		
1 person	9.2	18.5
2 persons	26.4	30.2
3 persons	15.9	17.3
4 persons	19.2	15.7
5 persons	12.7	9.4
6 persons	7.5	4.8
7 persons or more	9.1	4.1
Total	100.0	100.0
Education of head:		
8 years or less	16.3	23.4
9-12 years	53.0	48.4
13 years or more	30.7	28.2
Total	100.0	100.0
Race of head:		
White	97.3	88.7
Other	2.7	11.3
Total	100.0	100.0

(Table 1.1 continued)

TABLE 1.1--Continued

Characteristic	Sample	U.S. population 1973[a]
Household income:		
Under $2,000	.9	6.1
$2,000-$3,999	4.3	11.4
$4,000-$5,999	7.9	10.4
$6,000-$7,999	7.7	9.9
$8,000-$9,999	12.2	9.7
$10,000-$14,999	26.1	22.6
$15,000-$24,999	29.1	22.1
$25,000 and over	11.8	7.8
Total	100.0	100.0
Median income	$16,500	$10,500
Occupation of employed heads:		
Professional	8.4	15.6
Managers	20.3	14.7
Clerical, sales	15.7	15.8
Craftsmen	24.6	19.5
Operatives	9.4	16.5
Service workers	5.7	9.3
Farmers and farm laborers	13.2	4.0
Laborers	2.7	4.6
Total	100.0	100.0

[a] _Source_: U.S. Bureau of the Census (14 and 15).

and covered by Medicare insurance so that they are unlikely to belong to an HMO.

For the same reason, the sample has too few single-member households since these households consist largely of widows and widowers. The sample has hardly any non-whites. Because of the age and racial biases as well as the geographic locations selected, the sample is above the national average in social class measures. The sample is more highly educated and the average household income is substantially greater than for the total population. There are more farmers, managers, and craftsmen and fewer professionals, operatives, and service workers.

Even with these substantial biases, the sample does reflect a wide range of demographic characteristics in the two geographic areas used. The results, however, cannot be projected uncritically to predict what would happen on a national study of the general population. Other, larger studies of the general population will be required to confirm the results of this study. Nevertheless, the results of this sample clearly indicate the directions for future research.

Respondents in this panel study were members of either the Greater Marshfield Community Health Plan in central Wisconsin or Intergroup Prepaid Health Service, Inc. in the Chicago metropolitan area. The Intergroup respondents were all employees of the Illinois Bell Telephone Company and their families. An initial random sample of 1,007 was selected from membership lists, split equally between the two locations, of whom 987 were eligible for interviewing. The other 20 had moved or were deceased. The results of the efforts to interview these respondents and the subsequent cooperation are discussed in the next chapter.

Experimental Design

After the initial personal interview, respondent households were randomly assigned to one of six procedures involving method of compensation and data-collection method. In each location, a randomly selected one-third of the respondents kept ledger diaries and one-third kept journal diaries for three months; the other one-third participated in a series of three additional personal recall interviews once a month for three months. The diaries were collected at the end of each month by an interviewer who discussed the entries with the diary keeper, retrained the household if necessary, and left a new diary for the following month.

In the Chicago metropolitan area, half the households were offered a gift of $10 for cooperating for the three months, while half were not offered any gift. In the Marshfield area, half the households were offered a report of their medical experiences summarized over the three-month period and compared to other households of similar size, while the other half were not offered this report. Nevertheless, in Marshfield after data collection was completed, all cooperating households received this report. The report was offered instead of cash in Marshfield because of concerns that in a small community it would be impossible to keep the two treatments independent. Neighbors and relatives who received a cash gift would tell others who did not receive a gift, which could lead to substantial ill-feeling.

The differences in cooperation observed in the next chapter may partly be attributable to these different methods of rewarding respondents. Much more important, however, are the differences between the willingness in small towns and rural areas to cooperate on surveys compared to cooperation in large metropolitan areas. It was expected that cooperation would be higher in the Marshfield area, and it was. Comparisons between the Chicago and Marshfield areas in this report should suggest some of the differences to be expected in a national study between metropolitan and nonmetropolitan primary sampling areas.

Summary

Willingness To Participate in Panels

The most important finding of this study is that households are willing and able to participate in panels that report medical events. Regardless of the collection method, noncooperation after the initial interview averaged from 6 to 7 percent in the Marshfield area and from 10 to 14 percent in the Chicago metropolitan area. Almost all losses occurred in the first month. There was no evidence of unwillingness to keep diaries for three months (or probably even longer periods, if requested).

There were no significant differences in panel cooperation between households who used diaries and those who participated in monthly recall interviews. Compensation did have a significant effect on increasing cooperation, however, particularly in the Chicago area. The differences between Chicago and Marshfield are primarily due to the generally higher cooperation in the nonmetropolitan Marshfield area.

Although the special character of this sample would probably make households more willing than average to participate in a medical panel, one might still estimate that a national panel recruited by interviewers from the U.S. Bureau of the Census could obtain cooperation from 85 to 90 percent or more.

Levels of Reporting

Households using diaries reported 14 percent more medical events than did households on the recall interview. The major difference is in the category "felt ill but did usual tasks," where the level of reporting on diaries is almost double that from personal interviews. This higher level of reporting in diaries is not observed for all items. For several categories, such as phone calls to physicians, purchases of medicine, and payment of bills, the levels are higher for the personal recall interviews.

There are also some small but consistent differences in levels of reporting between compensated and noncompensated diary households, especially in the Chicago area, with the compensated households reporting higher levels. No effects of compensation on levels of reporting can be seen for the personal recall interviews.

Some indication of an initial conditioning effect is observed, with a higher level of reporting in the first month, regardless of method. It is not clear whether this is due to changes in accuracy of reporting over time or to changes in actual behavior. That is, the initial interview may have stimulated some households to see a doctor or dentist for a routine checkup.

Validation Comparisons

A comparison of clinic records with household reports indicates that using any procedure, no evidence exists of telescoping or of imaginary doctor or hospital visits. In the Marshfield area, about one-sixth of all clinic visits were omitted from household reports, regardless of the procedure used. In the Chicago area, on the other hand, only about half as many clinic visits were omitted by diary households as by households using personal recall interviews. For diary households in both Chicago and Marshfield, the omission rate is lower for those receiving compensation.

The Chicago validation results contradict the data on levels of reporting that indicated personal interviews produced a higher level of reports of doctor visits. These mixed results, both statistically significant, but based on different samples of events, indicate that no collection method is clearly superior for all kinds of medical events; additional research is required to resolve this issue.

Comparison of Reporting on Initial Interview and in Panel

Comparisons of the initial interview and subsequent recall interviews indicate that the initial interview is significantly higher (about 20 percent) on reports of number of days stayed home, probably due to telescoping. There are virtually no differences between the initial and subsequent interviews in number of bed days reported, but the panel did report many more hospital visits. The latter are almost entirely due to outpatient visits, which seem to have been missed in the initial interview since respondents were asked about hospital patients. Results on reports of doctor visits are mixed, with the initial interview higher than the diary reports but lower than the subsequent recall interviews.

Costs of Alternative Procedures

Major cost savings in interviewer travel time are observed between the initial and subsequent interviews. However, there are only small differences in costs between subsequent recall interviews and the cost of collecting the diaries. Despite the slightly increased cooperation of compensated households, the average cost per noncompensated household is lower if a cost of $10 for compensation is used. These cost comparisons do not reflect differences in quality of reported data, however.

A comparison of panel costs with costs of independent personal interviews indicates that independent interviews are cheaper if one is only interested in totals, but that panels are cheaper if one wishes to measure changes over time. Again, these comparisons do not take into account the quality of the reported data.

2. WILLINGNESS TO KEEP DIARIES OF MEDICAL EVENTS

Initial Cooperation

The first stage of this study was an initial interview with some knowledgeable adult in each household in the sample. Overall, of 987 eligible households an initial interview was obtained from 825, or 83.6 percent. As expected, the initial cooperation of 92 percent in the Marshfield area was higher than the 76 percent in the Chicago metropolitan area. Both these levels of cooperation are as high as or higher than those usually obtained in similar locations by non-government survey organizations.

The details are given in Table 2.1 by location, collection method, and compensation. If only the respondent affected cooperation, there should be no difference by type of procedure since the respondent did not learn of the additional task until the initial interview was completed. The interviewer was, however, aware at the start of the interview of what else would be required of the respondent, and this had either a conscious or subconscious effect on her. Thus, in both the Marshfield and Chicago areas, but especially in Marshfield, interviewers obtained higher cooperation from households where they knew that they would return for personal recall interviews than from households that would keep diary records. Similarly, when the interviewer knew that the respondent would receive some compensation for additional cooperation, initial cooperation was higher than when no compensation was to be offered.

TABLE 2.1

COOPERATION ON INITIAL INTERVIEW BY LOCATION AND PROCEDURE

(Percent)

Location and procedure	Cooperated	Refused	Noncontact	Total	N
Marshfield area:	91.7	6.8	1.5	100.0	484
Diary	89.7	8.1	2.2	100.0	321
Recall interview	95.7	4.3	-	100.0	163
Compensation	93.4	5.4	1.2	100.0	241
No compensation	90.1	8.2	1.7	100.0	243
Chicago area:	75.7	19.7	4.6	100.0	503
Diary	74.5	21.9	3.6	100.0	337
Recall interview	78.3	15.1	6.6	100.0	166
Compensation	78.4	16.9	4.7	100.0	254
No compensation	73.1	22.5	4.4	100.0	249

The differences in cooperation, ranging from 3 to 6 percentage points, are not very large, but they are statistically significant and consistent, as we shall see later in Table 2.3. Differences of the same type were observed in an earlier study (Sudman and Ferber [12]), where on an initial interview the cooperation rate for households who were to be compensated for keeping diaries was 85 percent, or 7 percentage points higher than the 78 percent initial cooperation of households who were not to be compensated.

Panel Cooperation by Collection Method

One of the crucial questions about the use of diaries for reporting medical events is whether households are willing to do the required work. If a substantial number of households are unwilling to keep records, then the diary method is subject to serious sample biases and costs become prohibitive. A key finding of this study is that, for the populations used in the study, there was a general willingness to keep diary records.

Part A of Table 2.2 indicates that between 72 and 73 percent of the original sample were willing to keep a written diary for three months, compared to 77 percent of the households who cooperated for three personal recall interviews. Most of this difference can be explained by the difference in cooperation on the initial interview. The differences for this comparison are not statistically significant (see Table 2.3, Part A).

When the effects of compensation are controlled (Table 2.2, Part D), the differences in cooperation for compensated households are even smaller. Among compensated households, 77 percent kept diaries for three months, while 80 percent cooperated for three personal interviews.

TABLE 2.2
PANEL COOPERATION BY PROCEDURE
(Percent)

Procedure	Initial	Month 1	Month 2	Month 3	N
A. Collection method:					
Ledger diary	79.2	75.2	74.3	73.1	327
Journal diary	79.5	75.8	73.1	72.2	331
Recall interview	86.0	81.2	78.7	76.9	329
B. Compensation:					
Compensation	84.0	80.4	79.2	78.2	495
No compensation	79.1	74.4	71.5	69.9	492
C. Location:					
Marshfield area	90.3	88.0	85.5	85.1	484
Chicago area	73.2	67.2	65.6	63.4	503
D. Collection method by compensation:					
Compensation					
Ledger diary	82.9	79.9	79.3	78.0	164
Journal diary	82.5	78.9	77.0	76.5	166
Recall interview	86.7	82.4	80.6	80.0	165
No compensation					
Ledger diary	75.5	70.6	69.3	68.1	163
Journal diary	76.4	72.7	68.5	67.9	165
Recall interview	85.4	79.9	76.8	73.8	164
E. Collection method by location:					
Marshfield area					
Ledger diary	85.6	83.1	82.5	81.2	160
Journal diary	90.1	89.4	85.1	85.1	161
Recall interview	95.1	91.4	89.0	89.0	163
Chicago area					
Ledger diary	73.1	67.7	66.5	65.3	167
Journal diary	69.4	62.9	61.8	60.0	170
Recall interview	77.1	71.1	68.7	65.1	166

(Table 2.2 continued)

TABLE 2.2--Continued

Procedure	Initial	Month 1	Month 2	Month 3	N
F. Compensation by location					
Marshfield area					
Compensation	92.1	90.0	88.4	88.4	241
No compensation	88.5	86.0	82.7	81.9	243
Chicago area					
Compensation	76.4	71.3	70.5	68.5	254
No compensation	69.9	63.1	60.6	58.2	249
G. Collection method by compensation and location:					
Marshfield area					
Compensation					
Ledger diary	87.3	83.5	83.5	83.5	79
Journal diary	91.4	91.4	88.9	88.9	81
Recall interview	97.5	95.1	92.6	92.6	81
No compensation					
Ledger diary	84.0	82.7	81.5	79.0	81
Journal diary	88.8	87.5	81.2	81.2	80
Recall interview	92.7	87.8	85.4	85.4	82
Chicago area					
Compensation					
Ledger diary	78.8	76.5	75.3	72.9	85
Journal diary	74.1	67.1	67.1	64.7	85
Recall interview	76.2	70.2	69.0	67.9	84
No compensation					
Ledger diary	67.1	58.5	57.3	57.3	82
Journal diary	64.7	58.8	56.5	55.3	85
Recall interview	78.0	72.0	68.3	62.2	82

TABLE 2.3

CHI-SQUARE VALUES AND PROBABILITIES FOR OBSERVED DIFFERENCES IN INITIAL INTERVIEW AND FINAL (THREE-DIARY) COOPERATION, BY PROCEDURE AND LOCATION

Procedure and location	Initial			Final	
	d.f.	χ^2	Pr.	χ^2	Pr.
A. Collection method	2	4.1	.04	2.0	.16
B. Compensation	1	3.0	.08	8.4	<.01
C. Location	1	47.3	<.001	59.3	<.001
D. Collection method by compensation					
Compensation	2	1.0	.30	.7	.42
No compensation	2	3.2	.07	1.6	.20
Compensation by collection method					
Ledger diary	1	2.0	.16	4.0	.05
Journal diary	1	1.3	.25	3.0	.08
Recall interview	1	.4	.50	1.7	.20
E. Collection method by location					
Marshfield area	2	7.1	.01	3.5	.06
Chicago area	2	1.0	.30	1.4	.24
F. Compensation by location					
Marshfield area	1	1.7	.20	4.2	.04
Chicago area	1	2.1	.15	5.8	.02
G. Collection method by compensation and location					
Compensation					
Marshfield area	2	5.3	.02	3.1	.08
Chicago area	2	.4	.50	1.4	.24
No compensation					
Marshfield area	2	2.5	.12	1.1	.30
Chicago area	2	1.5	.22	.7	.42

(Table 2.3 continued)

TABLE 2.3--Continued

Procedure and location	Initial			Final	
	d.f.	χ^2	Pr.	χ^2	Pr.
Compensation by collection method and location					
Marshfield area					
Ledger diary	1	.2	.70	.7	.42
Journal diary	1	1.3	.25	1.8	.18
Recall interview	1	.6	.46	2.2	.15
Chicago area					
Ledger diary	1	2.1	.15	5.2	.02
Journal diary	1	.8	.40	1.6	.20
Recall interview	1	0.0	.99	.4	.50

For each collection method, the greatest loss was in the first month, when the cooperation dropped 4 or 5 percentage points. In Months 2 and 3, the loss was only 1 or 2 percent. This suggests that the panel could have been extended to a longer time period (possibly six months or a year) with little additional loss in cooperation.

Panel Cooperation by Location

There are significant and expected differences in cooperation by location. The differences in cooperation on the initial interview widen after three months with 85 percent of the Marshfield area respondents still cooperating, compared to 63 percent of the Chicago metropolitan area residents (Table 2.2, Part C). In the Marshfield area, the differences observed in cooperation by collection method on the initial interview are maintained during the three months, with a drop of 4 to 6 percentage points in cooperation between the initial interview and three months later (Table 2.2, Part E). In the Chicago metropolitan area, the decline in cooperation from the initial interview was larger, ranging from 8 to 12 percentage points. Since in the Chicago area the personal interview resulted in the greatest loss of cooperation over the three months, the slight difference on the initial interview between collection methods was narrowed still further, so that after three months response by the ledger diary was slightly higher than by personal recall interview.

Panel Cooperation by Compensation

Compensation had a significant effect on increasing cooperation (Table 2.2, Part B), although there were some differences in the magnitude of the effect by location and collection method. The effects of compensation were generally greater in the Chicago than in the Marshfield area (Table 2.2, Part F). There is a 6 percentage point difference in final cooperation between Marshfield area households who were or were not compensated, while in the Chicago area the difference in final cooperation between compensated and noncompensated households is 10 percent. In the Marshfield area, the effects of compensation do not vary significantly by collection method (Table 2.2, Part G). In the Chicago area, on the other hand, there were much larger declines in cooperation for noncompensated households who kept diaries. On the personal recall interviews in Chicago, there is a 6 percentage point difference in final cooperation between households who were and were not compensated, while the difference between diary households who did and did not receive $10 in the Chicago area ranges between 9 and 16 percentage points.

The reason for the differences in compensation effects between the Marshfield and Chicago areas is not clear. The most direct explanation would seem to be that different forms of compensation were used and that cash is more effective than a summarized report of the household's medical experience. However, the differences may also be due to the size of the two areas. That is, in small towns and rural areas where initial cooperation is high, any form of compensation may be less effective than in large metropolitan areas.

Statistical Significance of Results

Chi-square tests with appropriate degrees of freedom were computed for each of the distributions shown in Table 2.1 and 2.2 for cooperation on the initial interview and final cooperation (keeping three diaries).

The values of chi-square and their probabilities are given in Table 2.3. As is evident from this table and as noted previously, the principal differences are due to location and compensation and to various interactions involving these two variables. Also noteworthy is the significance at the .05 level of the ledger diary, overall and for Chicago, which is a reflection of its superior performance over time in the Chicago area.

Discussion

The current Health Interview Survey, conducted by the U.S. Bureau of the Census for the National Center for Health Statistics, has a total noninterview rate of 4 percent. There is no reason to believe that panel dropouts would be greater than observed in the present study, particularly if some method of compensation were used. Thus, overall cooperation for an initial interview followed by either three personal recall interviews or three diaries would probably be in the range of 85 to 90+ percent if the data were collected by the Census Bureau. This is still a relatively low level of sample bias and would be justified if the panel procedures improved the accuracy of reporting. We turn to this aspect of the study in the next chapter.

3. LEVELS AND ACCURACY OF REPORTING ON DIFFERENT FORMS

Introduction

The main purpose of this study was to see if the accuracy of reporting of households could be improved by the use of diaries. If there were any improvement, it was expected to be primarily on the less important medical episodes, which in total, however, account for a large percentage of all illnesses and lost work days.

In this chapter, comparisons are first made between the absolute levels of reporting by collection method and compensation procedure. The data are then compared to clinic records to see which procedures provide the most valid information. Finally, the panel results are compared to the levels of reporting on the initial interview to give an indication of how reports from a national panel might compare to the current results of the Health Interview Survey.

Levels of Reporting by Collection Method

As previous experience with household behavior data would suggest, households who used a diary reported a higher level of medical events than did households who recalled information in a personal interview. Table 3.1 indicates that overall there was a 14 percent increase in the level of reporting on diaries compared to recall interviews. There seem to be no meaningful differences between ledger and journal diaries.

TABLE 3.1
LEVEL OF REPORTING BY COLLECTION METHOD
(Number of Events/Diary)

Event	Three-month total			
	Recall interview	Ledger diary	Journal diary	Ratio of diary to interview
Stayed home or could not do usual tasks	1.85	2.65	1.90	1.23
Felt ill but went to work or school or did usual tasks	2.44	4.19	5.31	1.95
Total doctor contacts	(5.84)	(4.95)	(4.35)	.80
Phone	1.14	.63	.27	.39
Acute	3.12	2.51	2.67	.83
Routine	1.58	1.81	1.41	1.02
Hospital	.46	.46	.32	.85
Total events	10.59	12.25	11.88	1.14
Medicine purchased	4.98	4.73	3.87	.86
Medical bills paid	2.99	2.00	2.83	.81
Number of households returning one or more diaries	(267)	(246)	(251)	

The major difference is clearly in the category "felt ill but did usual tasks." Here the level of reporting on diaries was almost double that from personal recall interviews. On several of the categories, the level of reporting was higher on the personal interviews: phone and acute doctor contacts, hospital visits, purchases of medicine, and payment of bills. Fortunately, we also have validation information on doctor and hospital visits that provides additional evidence on these differences.

Effects of Compensation

Compensation of households is intended primarily to improve cooperation, but on some previous studies there have also been effects on level of reporting (see Sudman and Ferber [12]). The same effects are seen in this study, although the differences between compensated and noncompensated diary households are much larger in the Chicago area than in the Marshfield area (Table 3.2). Even in Chicago, effects of compensation are smaller than are effects due to the collection method used. There are no effects of compensation on level of reporting in personal recall interviews. (The data in Table 3.2 combine ledger and journal diaries since there are virtually no differences in levels of reporting between the two diary types.)

Conditioning Effects

One concern with the use of panels is that participation in a panel could change household behavior. This seems less likely to occur with reports of medical events, although it is possible. Another possibility is that fatigue might occur so that households would report less completely

TABLE 3.2

LEVEL OF REPORTING BY PROCEDURE AND LOCATION

(Number of Events/Diary)

Location and event	Diary		Recall interview	
	Compensation	No compensation	Compensation	No compensation
Marshfield area:				
Stayed home	.82	.71	.66	.61
Felt ill	1.35	1.43	.92	.84
Total doctor contacts	(1.45)	(1.19)	(1.52)	(1.72)
Phone	.09	.12	.25	.21
Acute	.79	.65	.79	.81
Routine	.57	.42	.48	.70
Hospital	.14	.15	.10	.10
Total events	3.76	3.48	3.20	3.27
Medicine purchased	1.33	1.43	1.75	1.48
Medical bills paid	.38	.37	.74	.50
Number of diaries	(416)	(397)	(227)	(212)
Chicago area:				
Stayed home	.87	.59	.51	.68
Felt ill	2.08	1.52	.70	.75
Total doctor contacts	(2.10)	(1.50)	(2.36)	(2.40)
Phone	.26	.14	.55	.60
Acute	1.18	.87	1.28	1.44
Routine	.66	.49	.53	.36
Hospital	.14	.07	.21	.23
Total events	5.19	3.68	3.78	4.06
Medicine purchased	1.61	1.37	1.79	1.63
Medical bills paid	1.44	1.21	1.49	1.48
Number of diaries	(360)	(287)	(174)	(166)

in the later than in the earlier months of a panel. Confounding these possible conditioning effects are the known seasonal variations in frequency of illnesses.

The data in Table 3.3 suggest that some conditioning may be present. For each of the collection methods except the personal recall interviews in Marshfield, there was a consistent decline in level of reporting between Month 1 and Months 2 and 3. The study was started in the fall of 1973 and most households were recruited before Christmas. Seasonal data from the U.S. National Health Survey would have led us to expect that, if anything, there should have been a slight increase in illness from the earlier to the later months.

Except for noncompensated diary households in Chicago, there are no major differences between Months 2 and 3, so that virtually all the reduction is between Months 1 and 2. The differences are slightly larger for noncompensated households, indicating that the differences noted in Table 3.2 between levels of reporting of compensated and noncompensated households widen as the time period increases. The differences between months are sharper in the Chicago area than in the Marshfield area, which again mirrors the data in Table 3.2. Since there are no meaningful differences in reporting on the recall interview between households who were and were not compensated, these households are combined in Table 3.3.

This discussion suggests less accurate reporting in the later months of the panel. There is also some evidence that becoming a member of a panel reporting on medical events may have had the effect of reminding respondents that it was time for a routine checkup at either the doctor's

TABLE 3.3

LEVEL OF REPORTING BY MONTH IN PANEL, EVENT, LOCATION, AND PROCEDURE

(Number of Events/Diary)

Event, location, and procedure	Month 1	Month 2	Month 3	Ratio of Month 1 to Month 3
Total sample:				
Stayed home or felt ill	2.26	1.86	1.94	1.16
Acute doctor or hospital	1.33	1.28	1.27	1.05
Routine doctor visits	.67	.49	.44	1.52
Medicine purchased or medical bills paid	2.54	2.33	2.28	1.11
Total	6.80	5.96	5.93	1.15
Marshfield area:				
Diary				
Compensation				
Stayed home or felt ill	2.21	2.09	2.22	1.00
Acute doctor or hospital	1.08	.94	1.05	1.03
Routine doctor visits	.66	.56	.49	1.35
Medicine purchased or medical bills paid	1.65	1.83	1.66	.99
Total	5.60	5.42	5.42	1.03
No compensation				
Stayed home or felt ill	2.32	1.95	2.14	1.08
Acute doctor or hospital	.99	.92	.85	1.16
Routine doctor visits	.56	.37	.33	1.70
Medicine purchased or medical bills paid	1.88	1.66	1.85	1.02
Total	5.75	4.90	5.17	1.11
Recall interview[a]				
Stayed home or felt ill	1.34	1.51	1.72	.78
Acute doctor or hospital	.97	1.14	1.28	.76
Routine doctor visits	.78	.57	.41	1.90
Medicine purchased or medical bills paid	2.26	1.95	2.50	.90
Total	5.35	5.17	5.91	.91

(Table 3.3 continued)

TABLE 3.3--Continued

Event, location, and procedure	Month 1	Month 2	Month 3	Ratio of Month 1 to Month 3
Chicago area:				
Diary				
Compensation				
Stayed home or felt ill	3.45	2.76	2.61	1.32
Acute doctor or hospital	1.74	1.55	1.46	1.12
Routine doctor visits	.86	.50	.62	1.39
Medicine purchased or medical bills paid	3.57	2.70	2.88	1.24
Total	9.62	7.51	7.57	1.26
No compensation				
Stayed home or felt ill	3.12	1.81	1.37	2.28
Acute doctor or hospital	1.12	1.19	.97	1.15
Routine doctor visits	.55	.45	.48	1.15
Medicine purchased or medical bills paid	2.62	3.09	2.03	1.29
Total	7.41	6.54	4.85	1.52
Recall interview[a]				
Stayed home or felt ill	1.49	1.03	1.42	1.05
Acute doctor or hospital	2.31	2.06	2.13	1.08
Routine doctor visits	.53	.45	.35	1.51
Medicine purchased or medical bills paid	3.55	3.17	2.84	1.25
Total	7.88	6.71	6.74	1.17

[a] Compensation and no compensation combined.

or dentist's office. The largest difference between Month 1 and Month 3 is for routine doctor visits, where the ratio for the total sample is 1.52. If these routine visits at the discretion of the respondent were unusually high in the first month after the initial interview, then the longer period would give a better estimate of average behavior than would only one month's observation.

Statistical Significance of Results

It is evident that there are differences between the Marshfield and Chicago areas on many variables, including level of cooperation and level of reported medical events. For this reason, the analyses of variance presented here are shown separately for each of the two areas. Strictly speaking, these significance tests are only appropriate for the two areas selected for this study. Nevertheless, the results for the Chicago area may be useful in indicating what might be expected in other metropolitan areas, while the Marshfield data suggest what could be expected in non-metropolitan areas.

Analysis of variance computations are also performed separately for different medical events since the treatment effects vary with event. These analysis of variance computations are found in Appendix A. Table 3.4 summarizes these computations showing only the significant F ratios (at the .05 level or beyond) by procedure and medical event.[1]

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[1] Some approximations are used in the computations. Medical events are not normally distributed, but may be better fitted by a negative exponential distribution. No data transformations were used since previous experience indicated that they would have no effect on the results. The reader will remember from Chapter 2 that the cell sizes are not exactly equal due to differential cooperation. These differences in cell sizes

TABLE 3.4

F RATIOS FOR SIGNIFICANT EFFECTS AND INTERACTIONS ON REPORTED MEDICAL EVENTS

Location and event	A. Collection method	B. Compensation	C. Month	Interactions			
				AB	AC	BC	ABC
Marshfield area:							
Stayed home			6.9**				
Felt ill	9.4***		3.1*		2.3*		
Phone calls to doctor	7.0***						
Acute doctor visits							
Routine doctor visits			5.6***		3.6*		
Hospital outpatient visits				3.9*			
Hospital overnight stays	4.1*						
Medicine purchased	7.6***						
Medical bills paid	16.6***	5.4**		3.1*			
Chicago area:							
Stayed home	11.4***	10.7***					3.2*
Felt ill	12.9***	8.3**	5.3**	5.5**			
Phone calls to doctor	23.8***						
Acute doctor visits	4.5**	7.4**		3.2*			
Routine doctor visits	4.5**	11.6***	3.3*				
Hospital outpatient visits	3.6*						
Hospital overnight stays							
Medicine purchased	3.3*	11.5***	5.3**				
Medical bills paid	5.4*	9.2**					
Degrees of freedom	2,∞	1,∞	2,∞	2,∞	4,∞	2,∞	4,∞

*Significant at .05 level.
**Significant at .01 level.
***Significant at .001 level.

It may be seen in Table 3.4 that most interaction effects are not significant, with the exception of the interaction between collection method and compensation for a few events. Of the main effects, it is evident that method of collection has the largest effects in both the Marshfield and Chicago areas, although the effects are significant for eight of nine items in the Chicago area and only five of nine items in Marshfield.

Compensation has a significant effect on six of nine items in Chicago, but for only one item in Marshfield. Month has a significant effect on three items in both the Chicago and Marshfield areas, but some of these effects are due not to conditioning but to seasonal factors. An example of this is the significant effect observed in Marshfield on reported number of times that someone in the household stayed home. As may be seen in Table 3.3, this effect is due to the large increase in reported events in the third month, rather than a decline from the first month. On the other hand, reports of feeling ill and routine doctor visits decline significantly in both areas. Nevertheless, conditioning effects are still considerably smaller than are the differences between using diaries and personal recall interviews.

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are relatively small and hence were ignored, making the calculations a good deal simpler. Also, the within-cell variances were always used as the denominator for the F ratios. A slightly better procedure in general is to pool the nonsignificant interaction effects with the within-cell variances, but here the sample sizes within each cell were so large that it could make no practical difference. In addition, where interaction effects are significant, it is not really appropriate to compute F ratios for main effects. Nevertheless, this was done so that the reader could compare across locations and items.

Validation

With the consent of the respondents and the cooperation of the clinics in the Chicago and Marshfield areas, it was possible to validate some of the data reported on doctor and hospital visits. These data are only a subsample of all the reported doctor and hospital visits for the following reasons:

1. Only about three-fourths of all households agreed to have their reports validated.
2. Within a household, some adult household members did not agree to have their data validated or were not covered under the HMO plan.
3. In a few cases, files could not be located in the clinic for a household or household member, although other records indicated that the household was covered by the HMO plan.
4. Not all visits were to the cooperating clinics. The major exceptions were visits to dentists, chiropractors, and optometrists. In addition, some persons received medical care in another city or visited a physician who was not a member of the HMO plan.
5. Some visits to the clinics were not reported in clinic files although the detailed reports of the household made it extremely unlikely that the household was in error. Some instances are easy to understand. For example, some respondents reported weekly or periodic visits for allergy shots or prenatal checkups that were not in the records.

> Similarly, reports by respondents of pre- or post-surgery consultations with physicians were sometimes not found in the records. Since all the care was covered by the HMO, it is not surprising to find occasional omissions in the clinic files.

What we did not find was any substantial evidence of telescoping or misremembering of dates for either the recall interviews or the diaries. In a few cases, the respondent was in error by a few days, but this would have no effect on overall levels of reporting. It is evident that the bounded recall procedures used for the personal interviews were successful in avoiding telescoping. That is, the initial recall interview set a bound on medical events so that events reported in subsequent interviews did not include any events from an earlier time period. No telescoping was expected on diary records, nor was any observed.

The data in Table 3.5 show the number of medical events reported by the households that agree with clinic records, the number of visits to a physician reported by respondents for which there are no clinic records, the number of events found in clinic records that were not reported by respondents, and the number of visits to physicians and other medical providers that clearly were not to one of the cooperating clinics. When the household reported a visit to a physician and it was not clear from other data such as location in another city or payment of bill that the physician did not belong to the clinic, the event was categorized as "visit reported, no clinic record," although it was recognized that in some of these cases this might be an erroneous classification.

TABLE 3.5

COMPARISON OF REPORTED DOCTOR AND HOSPITAL VISITS AND CLINIC RECORDS, BY LOCATION AND PROCEDURE

(Number of Visits)

Location and procedure	Agreement	Visit reported, no clinic record	In clinic record, visit not reported	Visit not to clinic[a]	N
Marshfield area:					
Ledger diary	74	36	26	41	93
Compensation	43	17	5	21	45
No compensation	31	19	21	20	48
Journal diary	84	18	22	36	107
Compensation	56	14	11	22	49
No compensation	28	4	11	14	48
Recall interview	83	54	25	65	102
Compensation	32	23	14	40	54
No compensation	51	31	11	25	48
Chicago area:					
Ledger diary	185	45	19	165	82
Compensation	126	30	10	109	50
No compensation	59	15	9	56	32
Journal diary	187	62	33	140	82
Compensation	111	44	11	93	49
No compensation	76	18	11	47	33
Recall interview	182	37	39	157	85
Compensation	111	28	22	77	45
No compensation	71	9	17	80	40

[a] Includes visits to other physicians, dentists, optometrists, osteopaths, chiropractors, and other medical providers.

It appears from Table 3.5 that in the Chicago area there were about twice as many omissions on recall interviews as on the journal or ledger diaries. In the Marshfield area, on the other hand, there were no differences between the omissions on recall interviews and diaries although compensation seems to have had an effect on ledger diary households.

The comparisons are seen more clearly in Table 3.6, which gives the omission rate first as the ratio of omissions to clinic records, where clinic records are the sum of the "agreement" and "in clinic record, not reported" categories. The next ratio has total clinic visits in the denominator, where total clinic visits are the sum of clinic records and "visit reported, no clinic record." The final ratio has total visits in the denominator, where total visits is the sum of total clinic visits and "visit not to clinic."

The first ratio assumes that the omission rate for all visits not in clinic records is the same as for those in clinic records. The second ratio assumes that there are no omissions in reports of clinic visits for which there are no clinic records, and the third ratio assumes in addition that there are no omissions in reports of visits to other doctors and to dentists or other providers such as optometrists, osteopaths, and chiropractors. While the middle ratio, omissions compared to total clinic visits, seems based on the most plausible assumptions, some readers may prefer to use one of the other ratios.

Comparing data-collection procedures and the effects of compensation, all three ratios show the same pattern. In the Chicago area, the omission rate for diaries is about half that for recall interviews, and the omission rate for compensated households is lower than for noncompensated households.

TABLE 3.6

OMISSION RATES OF DOCTOR AND HOSPITAL VISITS AS A PERCENTAGE OF CLINIC RECORDS, TOTAL CLINIC VISITS, AND TOTAL VISITS, BY LOCATION AND PROCEDURE

(Percent)

Location and procedure	Clinic records	Total clinic visits	Total visits
Marshfield area:			
Ledger diary	26.0	17.6	13.8
Compensation	10.4	7.7	5.8
No compensation	40.4	29.6	23.1
Journal diary	20.8	17.7	13.8
Compensation	16.4	13.6	12.0
No compensation	28.2	25.6	19.3
Recall interview	23.1	15.4	11.0
Compensation	30.4	20.3	12.8
No compensation	17.7	11.8	9.3
Chicago area:			
Ledger diary	9.3	7.6	4.5
Compensation	7.4	6.0	3.6
No compensation	13.2	10.8	6.5
Journal diary	10.5	8.1	5.4
Compensation	9.0	6.6	4.2
No compensation	12.6	10.5	7.2
Recall interview	17.6	15.1	9.4
Compensation	16.5	13.7	9.2
No compensation	19.3	17.5	9.6

In the Marshfield area, diary households who were compensated have lower omission rates than households who reported by recall interviews, but there is sufficient variability in the results to make these conclusions very tentative.

For Marshfield, the validation results are in general agreement with the data in Table 3.2 and the analyses of variance in Appendix A in showing no significant differences due to collection method or compensation for acute and routine physician visits and hospital visits. In the Chicago area, the validation results indicate a significantly lower error rate for the diary methods, while the results of Table 3.2 show a higher level of reporting for the personal recall interview method. The differences due to the fact that the validation sample is a subsample of the total Chicago events and the differences between the Marshfield and Chicago area results make it difficult to conclude that either personal recall interviews or diaries are more accurate. Although we put somewhat greater credence in the validation comparisons than in the comparison of reporting levels, without additional evidence one can only make the weak statement that there are some omissions with all collection methods used in this experiment, and that for obtaining information on doctor and hospital visits, no method is clearly superior.

Perhaps the most significant finding from the analysis of clinic records is the absence of telescoping. If one believed that these results could be generalized to all medical events, then the large differences in Table 3.2 observed on items such as "felt ill but went to work or school or did usual tasks" could be due not to overstatements in diaries but only to underreporting in personal interviews. Similarly, differences in reports of telephone calls to physicians would be due to underreporting in diaries. Unfortunately, it is not certain that the lack of telescoping found on doctor and hospital visits can be generalized to less serious events. Nevertheless, the use of bounded recall and diary procedures has generally been found to eliminate telescoping, and the available data here support earlier methodological research.

Comparison of Reporting on Initial Interview and in Panel

The initial interview was conducted as part of the recruiting procedure for panel households and as a memory bound for subsequent reporting. That is, whatever was reported on the initial interview would not be reported on subsequent interviews unless the condition continued. The format of the initial interview was similar in most respects to the Health Interview Survey of the U.S. National Health Survey. Comparisons of the results of the initial interview to subsequent interviews and diaries give an indication of how the results here might compare to results of the Health Interview Survey for similar populations. However, direct comparisons to the Health Interview Survey are of limited value due to the special characteristics of the sample for this study.

Direct comparisons are possible on four items: number of days stayed home, number of bed days, number of doctor visits, and number of hospital visits. The data given in Table 3.7 are all converted to a 13-week period, the length of time that was covered by the diaries and three recall interviews. Since the initial interview asked about the number of doctor visits, bed days, and days stayed home during the last two weeks, a factor of 13/2 was applied to these items; number of hospital

TABLE 3.7

LEVEL OF REPORTING IN INITIAL INTERVIEW AND PANEL (13-WEEK PERIOD), BY EVENT

(Number of Events)

Event	Initial interview	Recall interviews	Diaries	Ratio	
				Recall to initial	Diaries to initial
Number of days stayed home	10.31	8.04[a]	7.08	.78	.69
Number of bed days	4.42	4.12	5.36	.93	1.21
Number of doctor visits	5.07	6.12[a]	4.57	1.21	.90
Number of hospital visits	(.085)	(.46)[a]	(.39)	5.64	4.58
Outpatient visits	-	.36	.30		
Overnight stays	.085	.10	.09		
N	(825)	(249)	(495)		

[a] Significant difference at .05 level between initial and later interviews.

visits was asked on an annual basis so here a factor of 1/4 was used on the initial interview.

The most direct comparisons are between the results on the initial and on subsequent recall interviews; however, the results for the diaries are also given in Table 3.7. It is clear that respondents on the initial interview reported a significantly higher number of days stayed home than they did in subsequent recall interviews. Here the internal evidence suggests that this difference is due to telescoping on the initial interview. It is unlikely that seasonal factors are responsible, since for most households the initial interview was in the fall before the peak of the winter cold season.

There is no significant difference in reports of number of bed days between initial and subsequent recall interviews. Presumably, memory was better on the initial interview for bed days since they are more serious than merely staying home.

There are significant differences between the initial and subsequent recall interviews on both number of doctor visits and number of hospital visits. The very large difference in reports of hospital visits is due to reports of hospital outpatient care. When this category is removed from the comparison, the reports for initial and subsequent recall interviews become identical.

The reason for the significant difference in number of doctor visits reported is less clear. It may be that the difference is due to visits to dentists reported in the panel but not in the initial interview, which asked only about contacts with a medical doctor. (The Health Interview Survey asks specifically about visits to dentists.) In any event, there is no evidence of telescoping of doctor visits on the initial interview, and given the differences in forms used, the levels of reporting are reasonably similar.

Overall, if one generalizes these comparisons, switching from the current Health Interview Survey to a panel using either diaries or monthly bounded recall interviews would have small effects on reports of serious illnesses, would substantially increase the reporting of hospital outpatient visits, and would reduce the reported number of days stayed home.

4. COSTS OF ALTERNATIVE PROCEDURES

It is clear from the previous chapter that at least for some kinds of medical data, the use of diaries or repeated interviews will provide more accurate information than a single interview. To measure the cost-effectiveness of these procedures, it is necessary to know the added costs of these alternative procedures. Such a cost analysis is described in this chapter.

Procedures for Cost Analysis

Data are presented here on the direct interviewer costs for the diary and personal recall interview procedures used in this study. These data are given separately for the Marshfield and Chicago areas since costs differed substantially in the two areas, reflecting the usual differences observed between metropolitan and nonmetropolitan area survey costs. Cost data for ledger and journal diaries are combined since there were no differences in the costs for these two diary forms, nor was any difference expected.

Each interviewer kept a separate timesheet for each sample unit so that it was possible to separate costs by method of collection and whether or not the household was compensated. However, the data are not completely unambiguous. On some trips, an interviewer may have contacted or attempted to contact two or more households. In that case, travel costs should have been allocated over all the households. The interviewer's judgment on how to allocate travel time was accepted, although it is possible that some minor errors in allocations were made. The direct cost data do not include training costs, meetings with supervisors, or any clerical activity not related to specific households. Also, cost data for supervisors or other persons working on the project cannot be classified by collection procedures or compensation and are not included in these tables.

Results

The basic results are given in Tables 4.1-4.3. Table 4.1 compares the total interviewer time and the time spent in travel and interviewing per completed interview, as well as the total miles driven, by location, data-collection methods, and compensation. Table 4.2 gives the dollar cost of interviews on the same basis using hourly rates of $3.00 in the Chicago area and $2.50 in the Marshfield area and 15¢ per mile to cover driving expenses. Table 4.3 compares the direct interviewing costs of alternative procedures.

The following results are observed:

1. The major cost savings noted in Table 4.2 between the initial interview and later interviews or diary collecting are due to the reduction in travel time spent locating households after the initial interview, as is evident from Table 4.1.
2. Very small differences are noted in direct interviewer costs between four personal interviews in the same household and an initial interview and collecting three diaries (Table 4.2). It appears that after the initial interview, subsequent personal recall interviews are much shorter and take little

TABLE 4.1

TRAVEL, INTERVIEWING, AND TOTAL TIME IN MINUTES PER INTERVIEW AND MILES DRIVEN BY INTERVIEWERS, BY PROCEDURE AND LOCATION

Item	Diary		Recall interview		Total
	Compensation	No compensation	Compensation	No compensation	
Marshfield area:					
Initial interview					
Total (min.)	126	145	128	134	134
Travel (min.)	53	62	53	60	57
Interview (min.)	37	41	36	36	38
Miles driven	25	30	31	28	28
N	(146)	(142)	(79)	(77)	(444)
Later interviews or diary collecting					
Total (min.)	61	64	71	76	66
Travel (min.)	32	36	33	36	34
Interview (min.)	17	16	24	24	19
Miles driven	18	17	18	19	18
N	(416)	(397)	(227)	(212)	(1,252)
Chicago area:					
Initial interview					
Total (min.)	204	205	202	214	209
Travel (min.)	123	129	125	126	126
Interviewing (min.)	40	39	40	44	41
Miles driven	43	42	39	45	43
N	(133)	(124)	(66)	(64)	(387)
Later interviews or diary collecting					
Total (min.)	81	81	94	84	84
Travel (min.)	48	47	49	39	46
Interview (min.)	18	18	29	27	21
Miles driven	20	21	20	15	19
N	(360)	(287)	(174)	(166)	(987)

TABLE 4.2

COSTS PER INTERVIEW BY PROCEDURE AND LOCATION

Location and interview	Dairy		Recall interview		Total
	Compensation	No compensation	Compensation	No compensation	
Marshfield area:					
Initial interview	$ 9.00	$10.54	$ 9.98	$ 9.78	$ 9.78
Later interviews or diary collecting	4.94	5.52	5.66	6.02	5.45
Chicago area:					
Initial interview	16.65	16.55	15.95	17.45	16.90
Later interviews or diary collecting	7.05	7.15	7.70	6.45	7.05

TABLE 4.3

DIRECT INTERVIEWING COSTS OF ALTERNATIVE DATA-COLLECTION PROCEDURES

Procedure	Marshfield area	Chicago area
Single interview	$ 9.78	$16.89
Four independent interviews with different households	39.12	67.56
Four interviews with same household	27.01	37.89
Personal interview and three diaries--no compensation	26.34	38.34
Personal interview and three diaries--$10 compensation	34.60[a]	48.04

[a] Assumes $10 for compensation, although none was paid in Marshfield.

more time than is spent by the interviewer in collecting a diary, checking it for accuracy, and retraining the household if required.

3. Since there are no appreciable differences in interviewer cost by method of compensation, the total interviewing cost is substantially higher when the household is compensated, as shown in Table 4.3. (The cost data assume a cost of $10 per household, both in the Marshfield and Chicago areas.)

For some purposes, it may be necessary that all data for a household be available for the entire period. In other words, households who cooperated only on the initial interview or for less than the full three months would have to be discarded. The average costs by procedure for households that cooperated for the entire three-month period are given in Table 4.4. Despite the increased cooperation among compensated households, the average costs per household were still less for noncompensated households. Again, the differences between four personal interviews and an initial interview followed by three diaries are small.

Remember that these are simply cost comparisons and do not reflect the differences in quality due to sample bias and accuracy of reporting discussed in the earlier chapters.

Comparison of Panel Costs to Costs of Independent Samples

It might appear from Table 4.3 that on cost grounds the use of panels over independent interviews might be advisable, regardless of whether the panels used diaries or recall interviews and regardless of the quality

TABLE 4.4

COSTS PER HOUSEHOLDS COOPERATING FOR ENTIRE THREE-MONTH PERIOD, BY PROCEDURE AND LOCATION

Location	Diary		Recall interview	
	Compensation	No compensation	Compensation	No compensation
Marshfield area	$34.24 (75)	$28.17 (70)	$40.37 (138)	$28.79 (129)
Chicago area	50.77 (57)	44.51 (51)	44.91 (117)	46.14 (94)

of data. The panel costs per interview with no compensation are two-thirds as high as independent interviews in the Marshfield area and only 56 percent of the costs of independent interviews in the Chicago area.

If one were only interested in estimates of totals, however, then it must be recognized that the amount of information available from a panel is not the same as that from four independent samples. The data coming from the same households are correlated and thus provide less information than that from four independent observations. This may be seen by considering the four observations from a single household as one cluster in a cluster sample. Hansen, Hurwitz, and Madow (5, p.259) have proved that the ratio of the variance of a cluster sample to the variance of a simple random sample is approximately

$$\frac{\sigma^2_{\text{cluster}}}{\sigma^2_{\text{s.r.s.}}} \doteq 1 + \rho\ (\bar{n}-1)$$

where ρ is the intra-cluster correlation. Here $\bar{n} = 4$, so $\bar{n}-1 = 3$.

The amount of independent information from four correlated observations may be expressed as

$$\frac{4}{1 + 3\rho}$$

Estimates of ρ for the parameters of this study are given in Table 4.5. For most variables, ρ ranges from .3 to .4. This means that the four observations are the equivalent of only about two independent observations. Since the panel costs are more than double the costs of the initial interviews, the cost-benefit ratio favors independent interviews over panels, if, again, quality of reported data is ignored.

TABLE 4.5

CORRELATIONS BETWEEN MONTHS FOR REPORTED MEDICAL EVENTS (INITIAL INTERVIEW EXCLUDED)

Event	$\rho_{1,2}$	$\rho_{1,3}$	$\rho_{2,3}$	$\bar{\rho}$
Times stayed home	.39	.34	.33	.35
Days stayed home	.43	.36	.43	.41
Bed days	.45	.37	.23	.35
Times felt ill	.40	.25	.56	.40
Days felt ill	.39	.33	.28	.33
Doctor phone calls	.15	-.06	-.06	.01
Doctor home visits	0	0	0	0
Doctor acute office visits	.37	.26	.45	.36
Doctor routine office visits	0	.24	.47	.24
Hospital outpatient visits	-.13	.04	.02	-.02
Hospital overnight stays	0	0	0	0
Number of medicines purchased	.36	.45	.42	.41
Amount paid for medicine	.14	.07	.25	.15
Number of medical bills paid	.48	.52	.46	.49
Amount of medical bills paid	-.01	.08	.23	.10

If, on the other hand, one is not interested in total data, but in changes over time, the panel data assume an added advantage over the independent observations. In this case, the information from a panel household is 1/1-ρ greater than that provided by an independent household, so that a panel of 1,000 households is the equivalent of independent samples of about 1,500 households. The cost benefits for panels shown in Table 4.3 are then magnified, and panel costs per interview become only half as great as independent interviews in the Marshfield area and only 40 percent of the costs of independent interviews in the Chicago area.

These quite different results are a further reminder that while the cost data given in this section are important, the ultimate choice of a data-collection procedure for a study depends on the uses to which the data are to be put.

5. DISCUSSION AND RECOMMENDATIONS

This final chapter discusses the implications of the findings of this study and suggests additional research that might be done. We first consider the general question of whether panels can improve the quality of medical data from households. We then make some suggestions on the methodological implications of our results.

The Use of Panels

Panels are used for gathering data on unemployment and general population characteristics in the single, largest, and most careful continuing survey in the United States, the Current Population Survey conducted by the U.S. Bureau of the Census. Without knowing all the uses that are made of the Health Interview Survey, it still appears likely that, for many purposes, panels provide more useful results than do independent surveys. Panels provide substantially lower sampling errors of measures of change at lower costs than do independent samples. It is also possible to observe changes in behavior not only at a national but at an individual level.

One can only assume that panels have been avoided because of concern about the cooperation of households or the quality of data that would be obtained from a panel. The results of this study suggest that neither of these concerns is a valid reason for not using panels. The results, although requiring additional testing on larger and more typical samples, do suggest strongly that households are willing and able to participate in medical panels and that cooperation should be even less of a problem than on the recently completed Consumer Expenditure Survey. It is evident that, as with most other panels, the greatest loss of cooperation occurs in the first month. There is no decline in cooperation or reporting accuracy in the third month of this study compared to the second, and even longer time periods might be possible.

Based on the comparisons between the initial interview and subsequent recall interviews and diaries, we conclude that the quality of data is better from panels than from independent samples. Both the bounded recall method and diaries eliminate the overstatements of medical events due to telescoping that are found on the initial interview. It should be recognized, however, that even with the current Health Interview Survey, telescoping is a problem only with the least serious events such as days stayed home from work or illness where the respondent still performed usual tasks. For more serious events, no telescoping is evident. Aside from telescoping, both the quantity and quality of details obtained is generally better in panels.

One relatively simple way to explore the usefulness of panels would be to follow the scheme of this study on a larger scale. That is, households in the Health Interview Survey would first be interviewed exactly as they are currently. Then a subsample, whose size would depend on the resources available, could be asked to participate using either diaries or additional recall interviews.

Bounded Recall vs. Diaries

Assuming that one is interested in using a panel, what are the implications of our study on whether to use bounded recall interviews or diaries in medical care surveys? The results of the study suggest that no collection procedure is superior for all kinds of events and households. If one places high priority on accurate estimates of the less serious illnesses, which in total account for such a large fraction of all medical events, then diaries seem better than bounded recall. For more serious illnesses and even for routine doctor visits, the differences are small, and our study does not indicate that either diaries or recall interviews are clearly superior.

As between ledger and journal diaries, the levels of reporting are not generally different. From an operational viewpoint, if this difference is negligible the ledger diary is preferable since it is much easier to code. Exactly this kind of reasoning led to the use of a ledger diary on the recent Consumer Expenditure Survey conducted by the Census Bureau, although there was some evidence that ledger diaries also produce slightly better reports (12).

The differences in cooperation and levels of reporting between the Marshfield and Chicago areas also suggest that different households may prefer different reporting methods. In the nonurban Marshfield area, recall interviews were preferred by many of the interviewers and households, and the results were better than in Chicago, where diaries seem to have been preferred. For some inner-city households, which were not generally found in the sample for this study, bounded recall interviews may be preferred

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to diaries. While it is not feasible to let every respondent household choose its method of reporting, it is not unreasonable to consider using a single procedure, with exceptions allowed in case of refusals or inability to report accurately.

Compensation

For consumer expenditure studies, the results clearly indicate the value of compensation for households who keep diaries. For medical diaries, which require many fewer entries from most households and where the topic is probably more salient, the value of compensation is reduced. Although there are small increases in cooperation and completeness of reporting for diary households who are compensated, the cost of compensation ($10 in this study) adds substantially to the total cost. The method used in Marshfield of giving households a summary of their own medical data compared to others is much cheaper, but also seems to have had less impact. The results are not sufficiently clear to enable us to recommend that compensation be or not be used, pending additional research.

Additional Research

The chief direction for expanding the results of this study is to a broader, more representative sample of the entire population. While a national sample, using some of the households from the Health Interview Survey, is possible, it would also be appropriate to conduct experiments in limited geographic areas such as the state of Illinois or the Chicago SMSA. The sample should not consist of special groups, but of the general population. While this makes validation far more difficult, although not impossible, the results of the larger study would indicate whether the high cooperation found on this study is a function of the special samples used.

There is no major need for testing new forms. If anything, the journal diary might be eliminated and comparisons made between ledger diaries and bounded recall interviews. Although continuing tests of the effects of compensation would be valuable, these would have a lower order of priority.

Some modifications in collection methods are possible to study. One variation that could reduce costs considerably would be to do the bounded recall interviews by telephone. The initial interview could be done face-to-face or also by phone. A cheaper variation in the diary procedure would be to have the household mail the diary to the interviewer, who would then check it and call the household back for clarification if necessary. Alternatively, the diaries might be sent to a central office, where similar phone calls would be made using WATS lines.

Finally, since three months did not seem to be too long a period, it might be useful to test periods of four to six months or even longer. Particularly if mail-in diaries were used, the data-collection costs could be cut substantially. As the periods got longer, however, the importance of compensation would almost certainly increase. Therefore, any test involving longer reporting periods should be accompanied by tests of compensation procedures.

REFERENCES

1. Boyd, Harper, and Westfall, Ralph. An Evaluation of Continuous Consumer Panels as a Source of Marketing Information. Chicago: American Marketing Association, 1960.

2. Ehrenberg, A. S. C. "A Study of Some Potential Biases in the Operation of a Consumer Panel." Applied Statistics, 9 (March, 1960), 20-27.

3. Ferber, Robert. "Observations on a Consumer Panel Operation." Journal of Marketing, 17 (January, 1953), 246-59.

4. Ferber, Robert. Collecting Financial Data by Consumer Panel Techniques. Urbana: Bureau of Economic and Business Research, University of Illinois, 1959.

5. Hansen, Morris H.; Hurwitz, William N,; and Madow, William G. Sample Survey Methods and Theory. Volume I: Methods and Applications. New York: Wiley, 1953.

6. Kemsley, W. F. F., and Nicholson, J. L. "Some Experiments in Methods of Conducting Consumer Expenditure Surveys." Journal of the Royal Statistical Society, Series A, 123 (Part 3, 1960), 307-28.

7. Life Study of Consumer Expenditures. Volume Four: Description of Operational Design and Procedures. New York: Time Inc., 1958.

8. Pearl, Robert. "Methodology of Consumer Expenditure Surveys." Working Paper No. 27. Washington, D.C.: U.S. Bureau of the Census, 1968.

9. Quackenbush, G. G., and Shaffer, J. D. Collecting Food Purchase Data by Consumer Panel--A Methodological Report on the M.S.U. Consumer Panel, 1951-58. Technical Bulletin 279. East Lansing: Agricultural Experiment Station, Michigan State University, 1960.

10. Roghmann, Klaus J., and Haggerty, Robert J. "The Diary as a Research Instrument in the Study of Health and Illness Behavior." Medical Care, 10 (March-April, 1972), 143-63.

11. Sudman, Seymour. "On the Accuracy of Recording of Consumer Panels: I and II." Journal of Marketing Research, 1 (May, 1964), 14-20; 1 (August, 1964), 69-83.

12. Sudman, Seymour, and Ferber, Robert. "Experiments in Obtaining Consumer Expenditures by Diary Methods." Journal of the American Statistical Association, 66 (December, 1971), 725-35.

13. Sudman, Seymour, and Ferber, Robert. "A Comparison of Alternative Procedures for Collecting Consumer Expenditure Data for Frequently Purchased Products." Journal of Marketing Research, 11 (May, 1974), 128-35.

14. U.S. Bureau of the Census. Current Population Reports: Population Characteristics. Ser. P-20, No. 258. Washington, D.C.: Government Printing Office, December, 1973.

15. U.S. Bureau of the Census. Current Population Reports: Consumer Income. Ser. P-60, No. 96. Washington, D.C.: Government Printing Office, August, 1974.

16. U.S. National Center for Health Statistics. Measurement of Personal Health Expenditures. Vital and Health Statistics, Ser. 2, No. 2. Washington, D.C.: Government Printing Office, June, 1963.

17. U.S. National Center for Health Statistics. Health Survey Procedure: Concepts, Questionnaire Development, and Definitions in the Health Interview Survey. Vital and Health Statistics, Ser. 1, No. 2. Washington, D.C.: Government Printing Office, May, 1964.

18. U.S. National Center for Health Statistics. Reporting of Hospitalization in the Health Interview Survey. Vital and Health Statistics, Ser. 2, No. 6. Washington, D.C.: Government Printing Office, July, 1965.

19. U.S. National Center for Health Statistics. Health Interview Responses Compared with Medical Records. Vital and Health Statistics, Ser. 2, No. 7. Washington, D.C.: Government Printing Office, July, 1965.

20. U.S. National Center for Health Statistics. Comparison of Hospitalization Reporting in Three Survey Procedures. Vital and Health Statistics, Ser. 2, No. 8. Washington, D.C.: Government Printing Office, July, 1965.

21. U.S. National Center for Health Statistics. Interview Response on Health Insurance Compared with Insurance Records, United States--1960. Vital and Health Statistics, Ser. 2, No. 18. Washington, D.C.: Government Printing Office, August, 1966.

22. U.S. National Center for Health Statistics. Interview Data on Chronic Conditions Compared with Information Derived from Medical Records. Vital and Health Statistics, Ser. 2, No. 23. Washington, D.C.: Government Printing Office, May, 1967.

23. U.S. National Center for Health Statistics. The Influence of Interviewer and Respondent Psychological and Behavioral Variables on the Reporting in Household Interviews. Vital and Health Statistics, Ser. 2, No. 26. Washington, D.C.: Government Printing Office, March, 1968.

24. U.S. National Center for Health Statistics. *Factors Related to Response in a Health Examination Survey, United States--1960-1962*. Vital and Health Statistics, Ser. 2, No. 36. Washington, D.C.: Government Printing Office, August, 1969.

25. U.S. National Center for Health Statistics. *Effect of Some Experimental Interviewing Techniques on Reporting in the Health Interview Survey*. Vital and Health Statistics, Ser. 2, No. 41. Washington, D.C.: Government Printing Office, May, 1971.

26. U.S. National Center for Health Statistics. *Reporting Health Events in Household Interviews: Effects of Reinforcement, Question Length, and Reinterviews*. Vital and Health Statistics, Ser. 2, No. 45. Washington, D.C.: Government Printing Office, March, 1972.

27. U.S. National Center for Health Statistics. *Reporting Health Events in Household Interviews: Effects of an Extensive Questionnaire and a Diary Procedure*. Vital and Health Statistics, Ser. 2, No. 49. Washington, D.C.: Government Printing Office, April, 1972.

28. U.S. National Center for Health Statistics. *Quality Control and Measurement of Nonsampling Error in the Health Interview Survey*. Vital and Health Statistics, Ser. 2, No. 54. Washington, D.C.: Government Printing Office, March, 1973.

29. U.S. National Center for Health Statistics. *Net Differences in Interview Data on Chronic Conditions and Information Derived from Medical Records*. Vital and Health Statistics, Ser. 2, No. 57. Washington, D.C.: Government Printing Office, June, 1973.

APPENDIX A

ANALYSES OF VARIANCE OF REPORTING LEVELS BY PROCEDURE AND MONTH

1. Number of Times Stayed Home from Work or School or Could Not Do Usual Household Tasks

Procedure and month	Sum of squares	d.f.	Mean square	f	Prob.
Marshfield area:					
A. Collection method	4.4	2	2.2	1.4	>.10
B. Compensation	5.3	1	5.3	3.4	<.10
C. Month	21.8	2	10.9	6.9	<.005
AB interaction	.2	2	.1	.1	>.10
AC interaction	4.4	4	1.1	.7	>.10
BC interaction	2.7	2	.7	.4	>.10
ABC interaction	5.6	4	1.4	.9	>.10
Within cell	1957.0	1242	1.58		
Total	2001.4	1259			
Chicago area:					
A. Collection method	30.1	2	15.0	11.4	<.001
B. Compensation	14.1	1	14.1	10.7	.001
C. Month	7.5	2	3.8	2.8	<.10
AB interaction	35.5	2	17.8	13.5	<.001
AC interaction	.8	4	.2	.2	>.10
BC interaction	1.0	2	.5	.4	>.10
ABC interaction	17.1	4	4.3	3.2	.025
Within cell	1280.1	972	1.3		
Total	1386.2	989			

2. Number of Times Felt Ill

Procedure and month	Sum of squares	d.f.	Mean square	f	Prob.
Marshfield area:					
A. Collection method	57.4	2	28.7	9.4	<.001
B. Compensation	.3	1	.3	.1	>.10
C. Month	19.2	2	9.6	3.1	.25
AB interaction	8.5	2	4.2	1.4	>.10
AC interaction	27.4	4	6.9	2.3	.05
BC interaction	2.8	2	1.4	.5	>.10
ABC interaction	13.0	4	3.25	1.1	>.10
Within cell	3792.0	1242	3.05		
Total	3920.6	1259			
Chicago area:					
A. Collection method	301.3	2	150.6	12.9	<.001
B. Compensation	96.9	1	96.9	8.3	<.005
C. Month	124.9	2	62.4	5.3	.005
AB interaction	127.5	2	63.8	5.5	<.005
AC interaction	105.3	4	26.3	2.2	<.10
BC interaction	5.6	2	2.8	.2	>.10
ABC interaction	20.0	4	5.0	.4	>.10
Within cell	11363.2	972	11.7		
Total	12144.7	989			

3. Phone Calls to Doctor

Procedure and month	Sum of squares	d.f.	Mean square	f	Prob.
Marshfield area:					
A. Collection method	7.0	2	3.5	12.5	<.001
B. Compensation	.1	1	.1	.4	>.10
C. Month	.1	2	.05	.2	>.10
AB interaction	.4	2	.2	.7	>.10
AC interaction	.2	4	.2	.7	>.10
BC interaction	.1	2	.05	.2	>.10
ABC interaction	1.7	4	.425	1.5	>.10
Within cell	349.5	1242	.281		
Total	359.1	1259			
Chicago area:					
A. Collection method	37.3	2	18.6	23.8	<.001
B. Compensation	2.7	1	2.7	3.5	<.10
C. Month	1.7	2	.85	1.1	>.10
AB interaction	4.4	2	2.2	2.8	<.10
AC interaction	3.4	4	.85	1.1	>.10
BC interaction	.9	2	.45	.6	>.10
ABC interaction	3.2	4	.80	1.0	>.10
Within cell	757.5	972	.78		
Total	811.1	989			

4. Acute Doctor Visits

Procedure and month	Sum of squares	d.f.	Mean square	f	Prob.
Marshfield area:					
A. Collection method	5.5	2	2.75	1.5	>.10
B. Compensation	5.0	1	5.0	2.7	.10
C. Month	1.1	2	.55	.3	>.10
AB interaction	7.5	2	3.75	2.0	>.10
AC interaction	13.5	4	3.38	1.8	>.10
BC interaction	6.5	2	3.25	1.8	>.10
ABC interaction	1.8	4	.45	.2	>.10
Within cell	2285.7	1242	1.84		
Total	2326.6	1259			
Chicago area:					
A. Collection method	31.6	2	15.8	4.5	.01
B. Compensation	25.6	1	25.6	7.4	<.01
C. Month	6.0	2	3.0	.9	>.10
AB interaction	22.3	2	11.15	3.2	<.05
AC interaction	.9	4	.22	.1	>.10
BC interaction	-	2	-	-	>.10
ABC interaction	4.5	4	1.12	.3	>.10
Within cell	3381.3	972	3.48		
Total	3472.2	989			

5. Routine Doctor Visits

Procedure and month	Sum of squares	d.f.	Mean square	f	Prob.
Marshfield area:					
A. Collection method	5.3	2	2.65	1.8	>.10
B. Compensation	.7	1	.7	.5	>.10
C. Month	16.9	2	8.45	5.6	<.005
AB interaction	10.8	2	5.4	3.6	.025
AC interaction	2.1	4	.5	.3	>.10
BC interaction	1.3	2	.65	.4	>.10
ABC interaction	5.8	4	1.45	.7	>.10
Within cell	1873.6	1242	1.51		
Total	1916.5	1259			
Chicago area:					
A. Collection method	11.8	2	5.9	4.5	.01
B. Compensation	16.3	1	16.3	11.6	<.001
C. Month	9.2	2	4.6	3.3	<.05
AB interaction	1.5	2	.75	.5	>.10
AC interaction	3.4	4	.85	.6	>.10
BC interaction	3.1	2	1.55	1.1	>.10
ABC interaction	1.2	4	.3	.2	>.10
Within cell	1370.6	972	1.41		
Total	1417.1	989			

6. Hospital Outpatient Visits

Procedure and month	Sum of squares	d.f.	Mean square	f	Prob.
Marshfield area:					
A. Collection method	1.1	2	.55	1.1	>.10
B. Compensation	.2	1	.2	.4	>.10
C. Month	.2	2	.1	.2	>.10
AB interaction	4.0	2	2.0	3.9	<.025
AC interaction	2.9	4	.72	1.4	>.10
BC interaction	1.4	2	.7	1.3	>.10
ABC interaction	1.3	4	.32	.6	>.10
Within cell	640.4	1242	.52		
Total	651.5	1259			
Chicago area:					
A. Collection method	3.2	2	1.6	3.6	.025
B. Compensation	1.0	1	1.0	2.3	>.10
C. Month	.2	2	.1	.2	>.10
AB interaction	.7	2	.35	.8	>.10
AC interaction	.6	4	.15	.3	>.10
BC interaction	.3	2	.15	.3	>.10
ABC interaction	2.0	4	.50	1.1	>.10
Within cell	401.8	972	.44		
Total	409.8	989			

7. Hospital Overnight Stays

Procedure and month	Sum of squares	d.f.	Mean square	f	Prob.
Marshfield area:					
A. Collection method	.06	2	.03	.8	>.10
B. Compensation	.15	1	.15	4.1	.05
C. Month	.01	2	.005	.1	>.10
AB interaction	.11	2	.055	1.3	>.10
AC interaction	.03	4	.008	.2	>.10
BC interaction	.04	2	.02	.5	>.10
ABC interaction	.12	4	.03	.8	>.10
Within cell	46.04	1242	.037		
Total	46.56	1259			
Chicago area:					
A. Collection method	.15	2	.075	2.9	<.10
B. Compensation	.01	1	.010	.4	>.10
C. Month	.03	2	.015	.6	>.10
AB interaction	.04	2	.020	.8	>.10
AC interaction	.07	4	.018	.7	>.10
BC interaction	.06	2	.030	1.2	>.10
ABC interaction	.05	4	.012	.5	>.10
Within cell	24.91	972	.026		
Total	25.32	989			

8. Number of Medicines Purchased

Procedure and month	Sum of squares	d.f.	Mean square	f	Prob.
Marshfield area:					
A. Collection method	52.0	2	26	7.6	<.001
B. Compensation	3.7	1	3.7	1.1	>.10
C. Month	10.9	2	5.45	1.6	>.10
AB interaction	13.0	2	6.5	1.9	>.10
AC interaction	13.0	4	3.25	.9	>.10
BC interaction	4.6	2	2.3	.7	>.10
ABC interaction	6.4	4	1.6	.5	>.10
Within cell	4263.0	1242	3.4		
Total	4366.6	1259			
Chicago area:					
A. Collection method	30.0	2	15	3.3	<.001
B. Compensation	52.5	1	52.5	11.5	>.10
C. Month	48.3	2	24.2	5.3	>.10
AB interaction	7.2	2	3.6	.8	>.10
AC interaction	18.5	4	4.6	1.0	>.10
BC interaction	11.2	2	5.6	1.2	>.10
ABC interaction	18.1	4	4.5	1.0	>.10
Within cell	4444.8	972	4.6		
Total	4630.6	989			

9. Number of Medical Bills Paid

Procedure and month	Sum of squares	d.f.	Mean square	f	Prob.
Marshfield area:					
A. Collection method	27.0	2	13.5	16.6	<.001
B. Compensation	4.4	1	4.4	5.4	<.025
C. Month	.2	2	.1	.1	>.10
AB interaction	5.0	2	2.5	3.1	>.05
AC interaction	1.2	4	.3	.4	>.10
BC interaction	1.8	2	.9	1.1	>.10
ABC interaction	1.7	4	.4	.5	>.10
Within cell	1004.8	1242	.8		
Total	1046.1	1259			
Chicago area:					
A. Collection method	41.6	2	20.8	5.4	<.025
B. Compensation	35.3	1	35.3	9.2	<.005
C. Month	15.8	2	7.9	2.1	>.10
AB interaction	11.1	2	5.55	1.5	>.10
AC interaction	7.4	4	1.85	.5	>.10
BC interaction	5.5	2	2.75	.7	>.10
ABC interaction	7.3	4	1.8	.5	>.10
Within cell	3710.0	972	3.8		
Total	3834.0	989			

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This study was conducted to determine the cost-effectiveness of diaries for obtaining health data from a general population sample. Comparisons were made between results obtained from diaries, face-to-face interviews, and telephone interviews. Effects of differential diary procedures and compensation were tested. Results indicated that levels of cooperation obtained with diary pick-up methods are as high as those obtained with repeated face-to-face or telephone interviews, but results from diary mail-in procedures are substantially worse than other methods. Compensation has no significant effect on cooperation for diary pick-up methods but does have for mail-in procedures. For less salient medical events, substantially higher reporting is obtained from personal interviews. For more salient events, differences in the number of reported events between diary and personal methods become insignificant. Diary households report slightly more purchases of medical supplies; details of medical events, expenditures, & reports about household members (other than respondent) are consistently more accurate.

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